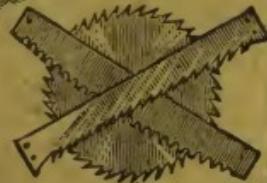
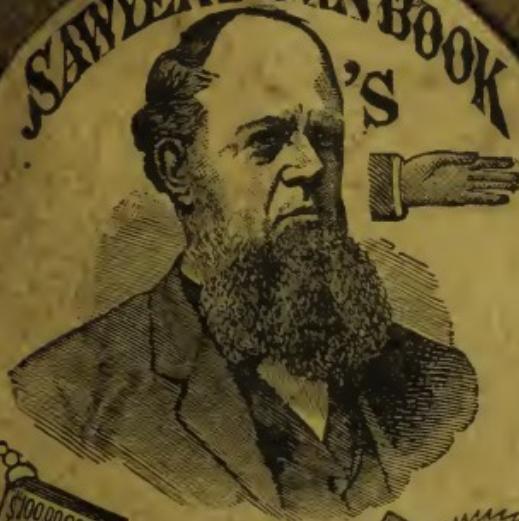


\$100,00 GOLD

SAYER'S OWN BOOK



EMERSON, SMITH & CO.

—LIMITED—

BEAVER FALLS, PA.

JAMES E. EMERSON, Chairman.

JULIUS F. KURTZ,

Vice-Chairman and Treasurer.

E. L. HUTCHINSON, Sec'y.

1892

IF YOU DON'T USE SAWS HAND THIS TO SOME ONE WHO DOES.

PREMIUM SAWS

KEY TO FIRST PAGE OF COVER:

"**EMERSON'S HAND-BOOK OF SAWS.**"



SOMETHING NEW IN SAW MAKING.

We claim to be the First Saw Manufacturers in the **WORLD** to introduce and use **NATURAL GAS** in **SAW TEMPERING**. Fortunately for us this region of country is underlaid with an inexhaustible fountain of **NATURAL GAS**, which is nearly all hydrogen known as hydrocarbon gas, which burns in a perfectly clear blue flame without smoke, giving a beautiful mild and perfectly uniform heat, entirely free from sulphur or any other base substance which renders **STEEL** brittle and cold-short and liable to crumble. Since its introduction, we find that our **STEEL DOES NOT OXYDIZE** and that all of our **SAWS HAVE A TOUGHNESS AND UNIFORMITY OF TEMPER** that we never were able to attain before. [SEE PAGE 76.]

OUR CUSTOMERS can now rest assured of getting the most perfect, **STRONGEST** and **TOUGHEST** Saws that have ever been made,

Saws That Will Not Crumble or Work Brittle.

SAW HAMMERING.

CAUTION.

There are men who thoroughly understand the art of Saw Hammering, in whose hands any saw is safe. But there is also an army of inexperienced, or partly experienced men traveling around, pretending to be able to do this work ; some of them have been sawmakers' helpers, who are trying to pick up the business.

We don't want such to have anything to do with one of our make of saws, and take this method of warning mill owners against these humbugs. You had better send your saw a thousand miles to a party whom you know can do you a good job than trust it to one of these traveling uncertainties.

Our increased sales through the West and South.

Since we adopted the use of SUPER EXTRA STEEL and NATURAL GAS, which gives the PUREST HEAT (so pure that it DOES NOT SCALE STEEL), our saws have so greatly improved in their quality and are so free from all defects that — for the heaviest and hardest work, where from 50 to 100 thousand feet are sawed every ten hours, and in the hardest yellow pine of the South—OUR SUPERIOR SAWS are superseding all others.

We are using the finest quality of steel regardless of its cost per ton, and cannot quote prices as low down as those of some makers who are using third and fourth grade cheap steel ; but we are selling a superior article at as *low a price* as it can possibly be offered.

 SEND TO US FOR BLANK ORDERS.

INTRODUCTORY LETTER.

We have taken occasion from time to time to call the attention of those engaged in manufacturing lumber, to the advantage of their using saws of the highest and best grade. In the past, the tendency has been too much in the direction of constantly pressing manufacturers for lower prices. Many manufacturers who have desired to make and meet these low prices, have met these demands by a steady deterioration in the quality of saws made by them. The result of this system has been that many of the saws ordinarily sold to saw millers are little better than trash, while the margin to those manufacturers who have used honest steel, and at the same time endeavored to meet prices has been reduced to the vanishing point. Consumers we are glad to see are now beginning to appreciate the fact that a few dollars difference in price between a first-class and an inferior saw is a small matter, and that in buying "cheap" saws they are but bringing trouble and tribulation on themselves, and in a measure throwing their money away. This Company have always conducted their manufacturing business on the principle of making better saws from day to day than they have ever made before, and EXCELSIOR has always been their motto and watchword. There is no hurried or skimped piece work done in our factory, every man is paid by the day, and given ample time to finish his work in a manner that will be creditable to himself and satisfactory to our customers. We have never cheapened a saw by deterioration of its quality, either in material or workmanship, although by greater experience, improved machinery and increased facilities and production we have in many cases been enabled to largely reduce the price of our goods.

We shall always avail ourselves of every facility which will enable us to legitimately reduce prices, but we shall never make that illegitimate reduction which comes from a poorer quality. Those using saws will find that the difference in cost between an "EMERSON SAW" and many others is not considerable, while the difference in real value is the difference between a good, and what often proves to be a worthless saw.

Other manufacturers have complimented us by bringing out alleged imitations and infringements on many of our saws and specialties, which they say are just as good as the "EMERSON." They usually do not repeat this to the same party, as experience is a great teacher.

The careful attention of the users of saws is called to the following pages, in which all of our specialties are fully illustrated and described, and assuring you of our desire to make only good goods at a fair price, we are

Respectfully,

EMERSON, SMITH & CO.

(Limited.)

BLANK FOR ORDERING CIRCULAR SAWS.

Please be very particular in giving Orders.

In ordering Solid Toothed Saws, be sure that you do not get them too thick and with too few teeth; since the introduction of our DAMASCUS TEMPERED SAWS, they are used thinner and with more teeth than formerly.

1. Size of Saw inches in diameter.
2. No. of teeth
3. Gauge of Saw at rim, No.....
4. Gauge of Saw at center, No.....
5. What style of Saws are preferred ?
6. Right or Left Hand Saw. Imagine yourself standing at the front of the Saw, with it cutting toward you; does the log, bolt, or timber pass to your right or left hand ?
.....
7. Size of Mandrel Hole.....inch.
8. Size of Pin Holesinch.
9. Distance apart of Pin Holes from center to center?
.....inches.
10. What kind of timber do you wish principally to saw?
.....
11. Is your timber subject to gravel, sand or spikes?
.....
12. Do you use water or steam-power?.....
13. Is your power regular or irregular?.....
14. About what number of revolutions per minute does your saw make when in the cut?.....
15. About what is the largest feed to each revolution that you wish the Saw to cut?.....

If you will describe exactly what you want, we will quote you Net Prices by return of mail. If you are in doubt as to what style of Saw is best for your work, please write to us giving all particulars by answering questions 10, 11, 12, 13, 14 and 15, and such other information as may be advisable; and whether you are a practical sawyer or employ one. We will then advise you what Saw will probably suit you best. We have so arranged our prices, that the style of Saw purchased is immaterial to us.

WITHIN THE LAST FEW YEARS

We have constructed probably one of the most
Ingenious and Perfect Automatic Machines

for milling the gains in all of our **INSERTED TOOTHED SAWS** not only to *ABSOLUTE PERFECTION*, but so *Reducing the Cost* that we are now enabled to furnish our Celebrated Planer and other Standard Inserted Toothed Saws at a price so near that of Solid Saws, and presenting so many advantages that they will entirely supercede in time the use of Solid Saws, for Board Mills.

WARNING TO PURCHASERS.

From three to five grades of steel are now made and sold for saws. Don't buy the cheapest saws offered, for they are made of *cheap steel* and will be a most miserable failure. Remember that we buy no cheap steel and make no cheap nor poor quality of saws, but we can sell a good saw as cheap as any other sawmaker can afford to.

Making Saws without Hammering.

N. B.—*We don't pretend to make Saws without hammering*, but we have the most expert saw makers, and all our saws are scientifically hammered, thereby throwing the strength where it is most needed; the tension is uniformly distributed, thus allowing the rim of the saw to expand by the centrifugal force created by the velocity of the saw, and strengthens it at the point where the velocity decreases.

EMERSON, SMITH & CO. (Limited),

Saw Manufacturers,

Beaver Falls, Pa.

On Pittsburgh, Ft. Wayne & Chicago R. R., near Pittsburgh
Also the Pittsburgh & Lake Erie R. R.

ACCOUNT OF THE GREAT SAWING CONTEST !

For \$100 in Gold.
THE TEST THIS MORNING.

EXTRACTS FROM THE CINCINNATI TRADE LIST, REPORTED
AT THE CONTEST.

"The excitement this morning was fully up to fever heat, with a promise of going even higher. The test proceeded with a Solid Toothing Saw, entered by Messrs. Emerson, Ford & Co. It was promptly made ready, and run the experimental lines in splendid style; but when it struck the test log it showed its real metal. It took in the situation most beautifully, making the sparks fly gaily at every entrance into the tough poplar, but was steady, and kept right down to actual work all the time, making sixteen good boards, 16x23, in two minutes and forty-four seconds, on 3½ inch feed, and coming out cool as a cucumber.

"The oak log was then placed upon the carriage, and the saw proved that its appetite had merely been sharpened by the poplar. It cut twelve oak boards, 12x16, in one minute and forty-three seconds, all No. 1 lumber. This is the crowning feat of the contest so far.

"Messrs. Emerson, Ford & Co. were awarded the silver medal for best Saw; simultaneously with this announcement, it was published that they were also the recipients of the \$100 Gold Premium for best sawing in the great contest which commenced last Wednesday and closed last Tuesday evening. We heard no dissent to the justice of these awards, and they are certainly no reflection upon the value or reliability of the Saws of other makers. Emerson, Ford & Co. did remarkable sawing, and they showed the best lumber made in the Exposition since the sawing commenced, but every one of their competitors did good sawing, and demonstrated their ability, of course, to make good Saws. We have complete notes of each performance from the first, and propose to analyze them very thoroughly in a few days.

"The Exposition is indebted to the Saw Manufacturers for one of its greatest attractions, and it is hoped that they will be

6 EMERSON, SMITH & CO. (Limited),

induced to return next year for even a more severely contested trial, and that liberal purses will be offered, for not only the first, but the second and third best in the race. With such remarkable competition, it is a great honor to rank even within hailing distance of the royal winner.

"Neither was it equaled by any of the succeeding tests, and was conceded that the selection of logs made by E., F. & Co., was by far the toughest that was sawed during the contest of all their competitors."

The unanimous adoption of the following resolution, signed by every contestant, shows conclusively the impartiality and fairness of the trial:

"RESOLVED, That we, the Saw Manufacturers, contestants in this the first trial of Circular Saws, do tender our thanks to Messrs. Lane & Bodley, for the use of their mammoth Circular Saw Mill.

"We acknowledge in the person of Mr. S. R. Smith a fair and impartial gentleman, who discharged the difficult and delicate duty of running the mill for the different competitors to our entire satisfaction.

"We also tender our thanks to Mr. A. C. Harrison for the disinterested and satisfactory manner in which he acted as setter.

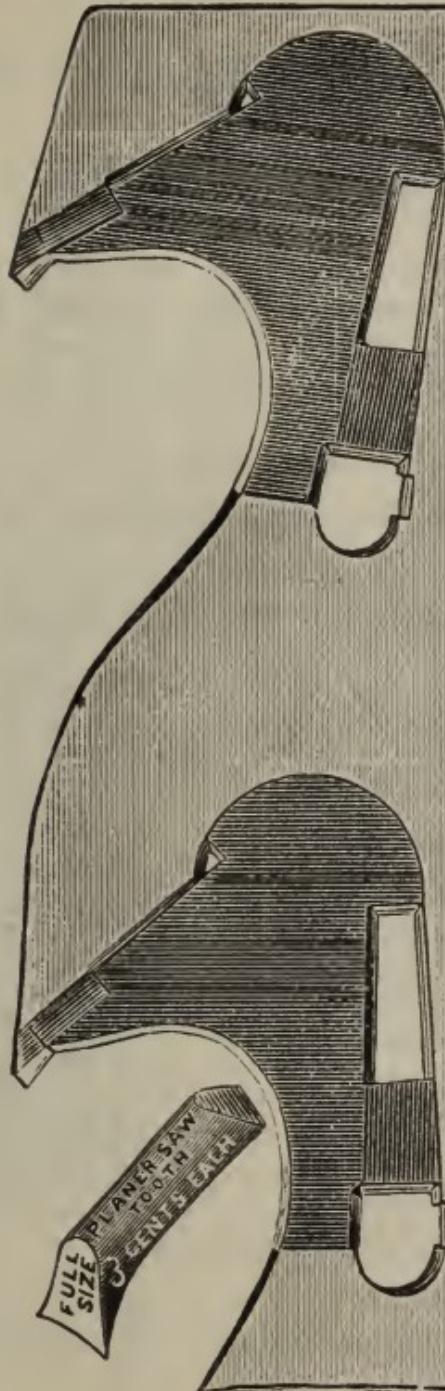
"To the judges, and all connected with the direction of this trial, we desire to place on record the fullest expression of our confidence in their fairness and impartiality.

"RESOLVED, That the thanks of the Saw Manufacturers represented in the Cincinnati Industrial Exposition are hereby tendered to the Trade List Association for the very full, able and impartial reports they have published during the test just closed, in the columns of the Trade List."

MORE THAN ONE HUNDRED TONS of SAWs and Saw Steel always in stock. And all of the very FINEST QUALITY of Steel all ordered and made expressly for our own use.

With this immense stock of Saws and Steel always on hand, and almost unlimited facilities for turning out work rapidly, our customers can rely upon having their orders filled promptly. In fact, nearly all the orders that come in we can ship right out of stock.

THIS MODEL IS A REDUCED COPY OF PLANER TOOTHED SAW.



THE STANDARD INSERTED TOOTHED SAW.

MORE THAN 10,000 IN USE USING OVER 10,000 Saw Bits DAILY

EMERSON'S PATENT PLANER TOOTHED SAW.

For inserting Planer Teeth in old saws, see page 9.

See Certificates commencing with page 92.

More than 10,000 No. 1 Planer Saws in operation.



No. 1 PLANER SAWS.

Those indicated by a star (thus *) are sizes generally kept on hand, with the usual number of teeth and gauge. We can make them with less teeth if desired, and of thinner gauge; but do not care to make any thicker, as the thickness given will run in any kind of timber.

N. B.—This is the Saw for all ordinary Mills.	Price.	Usual No. of Teeth.
36 in. to 9 gauge at rim, and 8 at center.....	\$66 00	20
38 " . 8 .. " .. " .. " 7 "	72 00	20
40 " .. 8 .. " .. " .. " 7 "	77 00	22
42 " .. 7 .. " .. " .. " 6 "	84 00	24
44 " .. 7 .. " .. " .. " 6 "	93 00	24
46 " .. 7 .. " .. " .. " 6 "	105 00	26
48* " .. 7 .. " .. " .. " 6 "	116 00	26
50* " .. 7 .. " .. " .. " 6 "	125 00	28
52* " .. 6 .. " .. " .. " 5 "	140 00	28
54* " .. 5 .. " .. " .. " 4 "	160 00	30
56* " .. 5 .. " .. " .. " 4 "	185 00	30
58 " .. 5 .. " .. " .. " 4 "	215 00	32
60* " .. 5 .. " .. " .. " 4 "	250 00	34
62 " .. 5 .. " .. " .. " 4 "	280 00	34
64 " .. 5 .. " .. " .. " 4 "	310 00	36
66* " .. 5 .. " .. " .. " 4 "	350 00	40
68 " .. 5 .. " .. " .. " 4 "	380 00	44
70 " .. 5 .. " .. " .. " 4 "	420 00	44
72 " .. 4 .. " .. " .. " 3 "	475 00	46
74 " .. 4 .. " .. " .. " 3 "	535 00	50

500 extra Bits given with each saw.

SEE LAST PAGE.

For prices of extra Saw Bits and Teeth for Inserted Toothed Saws, see page 27.

3 CENTS

For each one thousand feet of lumber sawed
will furnish the Patent Saw Points.



 For Testimonials, see page 92.

PRICE-LIST

OF

Planer Toothed Top Saws for Double Mills

AND

No. 2 Planer Toothed Saws,

Under 36 inches in diameter.

	Price.	Usual No. of Teeth.
22 in. to 10 gauge at rim, and 9 at centre....	\$32 00	14
24 " 10 " " " " 9 " " " " ..	35 00	16
26 " 10 " " " " 9 " " " " ..	40 00	16
28 " 10 " " " " 9 " " " " ..	45 00	18
30 " 9 " " " " 8 " " " " ..	50 00	20
32 " 9 " " " " 8 " " " " ..	55 00	22
34 " 9 " " " " 8 " " " " ..	60 00	24

250 extra Bits given with each Saw on this List.

SEE LAST PAGE.

Extra Bits same price and style as for our No. 1 Planer Saws.

Planer Toothed Top Saws at above List.

OLD SAWS MADE INTO NEW ONES !

REDUCED PRICE-LIST

For Inserting Planer Teeth in Old Saws.

Price for
Inserting
Teeth.

All Sizes to 36 in., any number of teeth to 24....	\$40 00
Over 36 and to 38 "	42 00
" 38 " 40 "	46 00
" 40 " 42 "	52 00
" 42 " 44 "	56 00
" 44 " 46 "	60 00
" 46 " 48 "	64 00
" 48 " 50 "	68 00
" 50 " 52 "	72 00
" 52 " 54 "	75 00
" 54 " 56 "	80 00
" 56 " 58 "	86 00
" 58 " 60 "	92 00
" 60 " 62 "	100 00
" 62 " 64 "	110 00
" 64 " 66 "	122 00
" 66 " 68 "	130 00
" 68 " 70 "	145 00
" 70 " 72 "	165 00

NO DISCOUNT OFF THIS LIST.

Saws will be measured from point to point of the teeth after finishing. No extra charge for cutting down plates. 500 EXTRA PATENT PLANER POINTS GIVEN WITH EACH SAW.

EXPERIENCE,

THE BEST OF TEACHERS.

We have learned by long experience that our *Regular Planer Saw* with *Rigid Wedge Fastening* is the only reliable saw of the kind on the market.

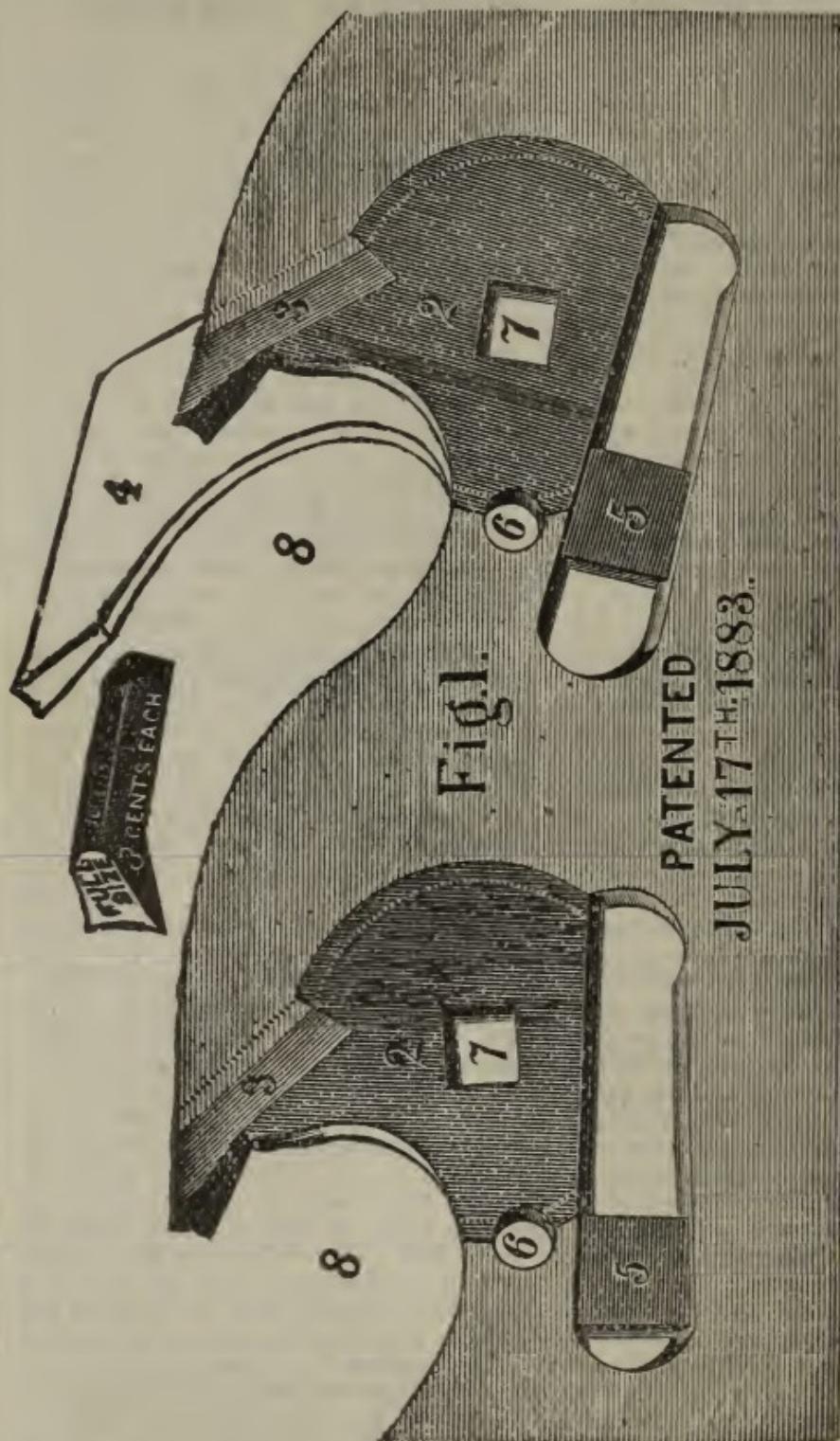
All other Imitations have proved Failures.

Any kind of a fastening for holding the Bits or Chisel Teeth or points as they are called, which is so constructed as to yield by springing (depending on the elasticity of the mouth-piece to hold the Bit or Tooth in place), has proved a failure and a short-lived device. For heavy feed, hard timber, and especially **FROZEN TIMBER**, they have utterly failed.

All of these imitations and infringements of our patents (of which we are the sole owners) have brought much disrepute on the General Inserted Toothing Saw business. Notwithstanding this, the general reputation of our *Inserted Toothing Saws*, especially our *Planer Saw*, is such that we have more than doubled our sales in the past year and proved the old adage : *That an intelligent public cannot be long humbugged.* During twelve winters, timber frozen at from 20 to 35 degrees below zero and as hard as ivory ; saws full of frost ; solid teeth breaking and snapping off like pipe stems, our Planer Saws have proved the champions of all.

SAWING FROZEN TIMBER.

Frosted steel is always brittle. No intelligent woodsman will use an axe full of frost to cut frozen timber. The frost must be taken out of a chopping axe or else it will be liable to break. It is the same with a saw, a Circular saw is also weak at the centre when full of frost, because steel contracts when cold, and a circular saw being smaller at the centre than at the rim, the latter will contract most, and when full of frost the saw will appear like one that is "*rim bound*." Saws are manufactured at a temperature not lower than 70 degrees, and if the saw is colder than this the tension changes. In very cold weather it is always best to take the frost out of a saw before sawing frozen timber. A little hot water thrown on each side of a saw will soon remove the frost. If hot water is not easily obtained, start up the saw, and while in motion pry over the side of the saw-frame with a piece of board, moving it along on the saw, the friction will, in a few minutes, warm the saw and take out the frost. In very cold localities it is advisable for mill owners, who run their mills through the frozen winters, to have a saw fully two gauges heavier for winter use than for summer, and as it can be run with less set in frozen timber than when not frozen, each saw will cut about the same width of kerf. It is a mistake to run saws with very wide set in frozen timber. Timber when frozen cuts very clean. In slabbing, the corners of the teeth next to the log cut on an average about twice the amount of the opposite corners, and strike the timber when the opposite corner is not in the cut, and with timber and knots frozen, it is about as hard as ivory. In frozen timber, run your saw as close as possible, but be sure and keep the EXTREME CUTTING CORNERS THE WIDEST. DON'T LET THEM get worn off so that at the extreme corners they will be narrower than they are at 1-32d inch or so back. If you are using a Planer Saw in frozen timber, either send to us and get Bits, say one or two gauges narrow, or put in your worn Saw Bits. SELECTED IN SETS, so that they are all of same length, then your saw will be round, put them in and dress off the sides into the proper shape. Then grind off the edges of fine or second cut Mill Files so that they will not cut the mouth-pieces, and file the Bits on the under sides, and be careful not to wire the cutting points when filing. Give your saw a little more LEAD INTO THE carriage in frozen timber than when it is not frosted, because in slabbing frozen timber the saw is more liable to crowd off than when the timber is soft, and when it crowds off, the log rubs the body of the saw and heats it, then you have a weak saw.  If you have a Planer Saw that has been in use for any considerable time so that it is worn and does not hold the Bits perfectly firm, put in a set and tighten up the wedges just so that the bits cannot be worked with the fingers easily. Now, take a small steel punch, about the size of a small carpenter's nail punch, and with a light hammer set the steel of the Saw Plate down around the heel of the Saw Bits a very little, then set up the wedges under the mouth pieces, and your saw will hold the bits as well and as firmly as when new, and will continue so for years.



EMERSON'S PATENT UNIVERSAL SAW.

PRICE-LIST OF PATENT UNIVERSAL SAWs.

Supplied with one set Clipper Teeth, one
set Moutu-Pieces, 500 extra Saw Bits
and one Patent Saw Swage.

AS A PLANER SAW ONLY

With 500 extra bits.

36 in. to 8 gauge at rim, 7 at center, \$74 00	8 " "	80 00	38 " "	8 " "	72 00	36 in. to 8 gauge at rim, 7 at center, \$66 00	8 " "	8 " "	72 00	38 " "	9 " "	72 00
38 " " 8 " "	7 " "	86 00	40 " "	8 " "	77 00	40 " "	9 " "	8 " "	77 00	42 " "	9 " "	8 " "
40 " " 8 " "	7 " "	93 00	42 " "	7 " "	84 00	42 " "	9 " "	8 " "	84 00	44 " "	8 " "	7 " "
42 " " 7 " "	6 " "	104 00	44 " "	7 " "	93 00	44 " "	8 " "	7 " "	93 00	46 " "	8 " "	7 " "
44 " " 7 " "	6 " "	114 00	46 " "	7 " "	106 00	46 " "	8 " "	7 " "	106 00	48* " "	8 " "	7 " "
46 " " 7 " "	6 " "	125 00	48* " "	7 " "	116 00	48* " "	7 " "	6 " "	116 00	50* " "	7 " "	6 " "
48* " "	6 " "	135 00	50* " "	7 " "	125 00	50* " "	7 " "	6 " "	125 00	52* " "	6 " "	5 " "
50* " "	6 " "	150 00	52* " "	6 " "	140 00	52* " "	6 " "	5 " "	140 00	54* " "	6 " "	5 " "
52* " "	5 " "	172 00	54* " "	5 " "	160 00	54* " "	6 " "	5 " "	160 00	56* " "	6 " "	5 " "
54* " "	5 " "	195 00	56* " "	5 " "	185 00	56* " "	6 " "	5 " "	185 00	58 " "	6 " "	5 " "
56* " "	5 " "	226 00	58 " "	5 " "	215 00	58 " "	6 " "	5 " "	215 00	60* " "	6 " "	5 " "
58 " "	5 " "	265 00	60* " "	5 " "	250 00	60* " "	6 " "	5 " "	250 00	62 " "	6 " "	5 " "
60* " "	5 " "	295 00	62 " "	5 " "	280 00	62 " "	5 " "	4 " "	280 00	64 " "	5 " "	4 " "
62 " "	5 " "	332 00	64 " "	5 " "	310 00	64 " "	5 " "	4 " "	310 00	66 " "	5 " "	4 " "
64 " "	5 " "	364 00	66 " "	5 " "	350 00	66 " "	5 " "	4 " "	350 00	68 " "	5 " "	4 " "
66 " "	5 " "	396 00	68 " "	5 " "	380 00	68 " "	5 " "	4 " "	380 00	70 " "	4 " "	3 " "
68 " "	5 " "	424 00	70 " "	5 " "	420 00	70 " "	4 " "	3 " "	420 00	72 " "	4 " "	3 " "
70 " "	5 " "	496 00	72 " "	4 " "	475 00	72 " "	4 " "	3 " "	475 00	74 " "	4 " "	3 " "
72 " "	5 " "	550 00	74 " "	4 " "	535 00	74 " "	4 " "	3 " "	535 00	76 " "	4 " "	3 " "

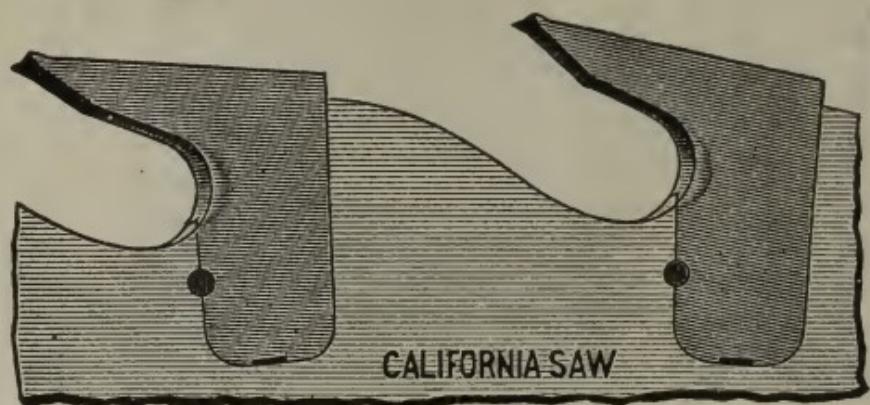
500 extra bits given with each saw.
The above sizes are when used as a
Planer Saw. When Clipper Teeth are
used it will be two inches larger.

None of the above Saws will be made lighter than No. 9 gauge.
THOSE IN PRICE-LIST MARKED * ARE KEPT IN STOCK READY FOR SHIPMENT.

600 extra bits given with each saw.
The above sizes are when used as a
Planer Saw. When used as a Clipper it
will be two inches larger.

The above sizes are when used as a
Clipper Saw. With Planer Teeth they
will be two inches smaller.

As an Inserted Toothed or Clipper
Saw only.
With one of our Patent Swages.



THE CALIFORNIA SAW.

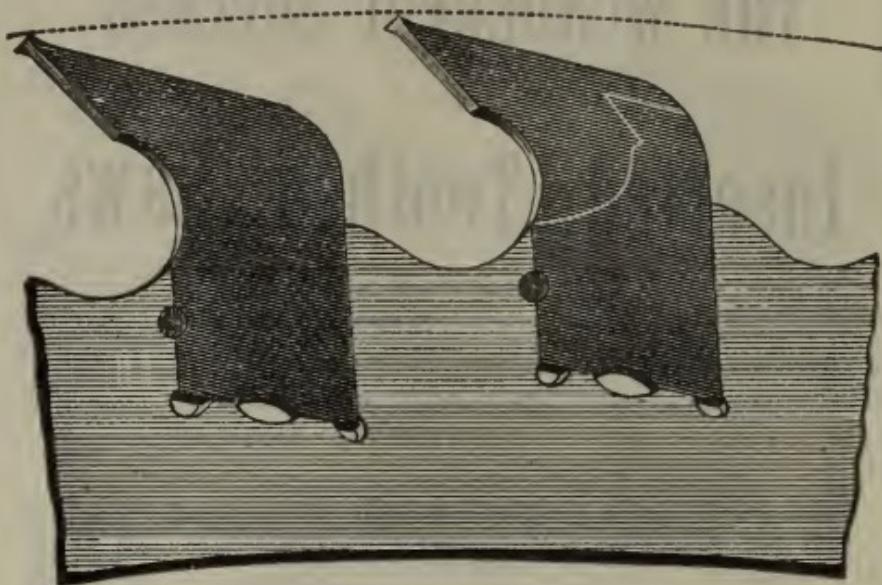
The above cut represents the Inserted Toothed Saw mostly in use on the Pacific Coast, including California, Oregon and Washington Territory. There are three sizes, Nos. 1, 2 and 3; Nos. 2 and 3 being the leading sizes, which we illustrate full size on a large sheet which we will send to any applicant. The prices of these saws are the same as that of our Patent Lumberman's Clipper on page 20, and we are prepared to furnish them of all sizes with our improved quality of teeth, at the shortest possible notice.

THE WONDERFUL SUCCESS — OF — Inserted Toothed Saws

IS CLEARLY SHOWN BY THE large demand FOR Extra Teeth TO SUPPLY THOSE IN OPERATION. WE ARE MANUFACTURING several millions OF BITS YEARLY FOR OUR Standard Inserted OR Planer Toothed Saws, AND ABOUT One Hundred and Fifty Thousand Teeth FOR OUR DIFFERENT STYLES OF Flange AND Clipper Toothed Saws.

We manufacture such a variety of different styles of **Inserted Toothed Saws** that we can suit every condition of mill, from the smallest, cutting but a few thousand feet per day, to the largest, using shot-gun steam feed, and the product of which will run nearly one hundred thousand feet per day. **We have always been in the lead, and do not propose to "get left."** We appreciate the fact that prices have been on the down grade for several years, and by improved methods of manufacture have accommodated ourselves to the tendency of the times. We cannot sell an Inserted Saw at as low a price as a Solid Toothed, **but we can surprise you with the extremely low prices that we will be able to quote.** Read this Book carefully, and write to us fully as to what you may want.

(SEE PAGE 120.)



SAWYERS' CLIPPER.

For all Thin Gauge Tapered Saws. For Shingle, Heading, Re-Sawing, and for all Bench Saws. This Saw is made as thin as No. 17 Gauge.

No Inserted-Toothed Saw has ever been introduced that has given such general satisfaction for extra thin Saws as the Lumberman's Clipper, and the Sawyers' Clipper is only a modification in making the teeth still smaller, in order to furnish Saws with a greater number.

We have received hundreds of applications for Shingle and other Taper-Ground Saws, with inserted teeth. It being so very important that all Taper Ground Saws retain their original size, that we made this Saw

TO MEET A SPECIAL WANT.

PRICE LIST

— OF —

SAWYERS' CLIPPER.

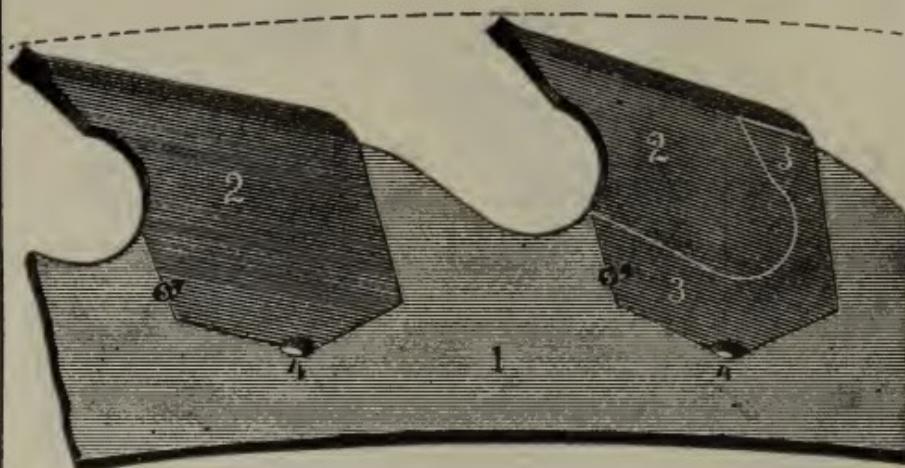
DIAMETER.	GAUGE.	PRICE.	Usual No. of Teeth.
10 inch.....	12 to 17.....	\$10 00	10
12 "	12 to 17.....	12 00	12
14 "	12 to 17.....	14 00	14
16 "	11 to 17.....	16 00	18
18 "	11 to 17.....	18 00	20
20 "	11 to 17.....	20 00	24
22 "	11 to 17.....	23 00	28
24 "	10 to 17.....	27 00	30
26 "	10 to 17.....	31 00	34
28 "	10 to 17.....	34 00	36
30 "	10 to 17.....	37 00	40
32 "	10 to 17.....	40 00	44
34 "	10 to 17.....	43 00	46
36 "	10 to 17.....	45 00	48
38 "	10 to 17.....	48 00	50
40 "	10 to 17.....	53 00	54
42 "	10 to 17.....	60 00	56
44 "	10 to 17.....	70 00	60
46 "	10 to 17.....	80 00	62
48 "	10 to 17.....	90 00	66
50 "	10 to 17.....	100 00	70
52 "	10 to 17	110 00	74

The above prices include all Taper-Ground Saws, Shingle Saws and for Heading. Also, a Swage suitable for spreading the teeth of each Saw, or one dollar discount where no Swage is wanted.

No reduction in price for less number of teeth.

We can put forty-eight of these teeth in a 36-inch Shingle Saw. We make Saws of this style as thin as No. 17 gauge, but not thicker than No. 10. They are particularly adapted to sawing Shingle, Heading re-sawing of all kinds and for all kinds of bench work.

**Price of Extra Teeth for Sawyers' Clipper,
only 15 cents each.**



EXTRA TEETH, 50 cents each. See page 27.

For testimonials, see pages 109-110.

SEE LAST PAGE.

PRICE LIST

OF

THE PATENT CLIPPER SAWS,

Expressly for Heavy Feed.

With No. $2\frac{1}{2}$ Teeth for sawing logs and timber.

The Teeth for this Saw, which cost only **50 Cents** each, have more wear than others which cost \$1.00 each.

	Price.		Price.
36 diam. to 9 gauge...	\$44 00	56 diam. to 5 gauge...	\$150 00
38 " to 8 " ...	48 00	58 " to 5 "	... 175 00
40 " to 8 " ...	53 00	60 " to 5 "	... 210 00
42 " to 8 " ...	60 00	62 " to 4 "	... 240 00
44 " to 7 " ...	70 00	64 " to 4 "	... 270 00
46 " to 7 " ...	80 00	66 " to 4 "	... 300 00
48 " to 6 " ...	90 00	68 " to 4 "	... 330 00
50 " to 6 " ...	100 00	70 " to 3 "	... 360 00
52 " to 5 " ...	115 00	72 " to 3 "	... 390 00
54 " to 5 " ...	130 00		

N. B.—No. 7 Gauge is plenty thick for any Saw up to 72 inches in diameter. This Tooth is particularly adapted for thin Saws. We have Saws of this style of Tooth to 60 inches in diameter as thin as No. 10 gauge, and give perfect satisfaction, and we do not care to make any Saw of this style of Tooth thicker than No. 6 gauge at the rim, and from one to two gauges thicker at center than at the rim.

Emerson's celebrated Patent Universal and Adjustable Saw Swage given with each Saw. Sells for \$4.00.

OLD SAWS MADE INTO NEW ONES!**REDUCED PRICE LIST**

For Inserting No. 2½ Clipper and No. 2 Flange Teeth in old Saws.

No. 2 Flange and No. 2½ Clipper Teeth have 3 inches of wearing face on the cutting edge. See pages 15 and 22.

SIZE.

Diam. Inches.	Diam. Inches.	Number Teeth inserted.	Price per Saw.
36 and less than 38,	any number of teeth not exceeding	20	\$28 00
38....."	40....."	"....."	22 30 00
40....."	42....."	"....."	24 32 00
42....."	44....."	"....."	26 34 00
44....."	46....."	"....."	26 37 00
46....."	48....."	"....."	28 40 00
48....."	50....."	"....."	28 43 00
50....."	52....."	"....."	30 46 00
52....."	54....."	"....."	30 50 00
54....."	56....."	"....."	32 55 00
56....."	58....."	"....."	34 60 00
58....."	60....."	"....."	34 65 00
60....."	62....."	"....."	36 70 00
62....."	64....."	"....."	38 75 00
64....."	66....."	"....."	38 80 00
66....."	68....."	"....."	40 90 00
68....."	70....."	"....."	40 100 00

EMERSON'S CELEBRATED PATENT UNIVERSAL ADJUSTABLE SAW SWAGE given with each Saw. Sells for \$4.00. We pay freight charges to us, but not return charges.

OLD SAWS MADE INTO NEW ONES

BY HAVING

Emerson's Patent Teeth Inserted in Them.

Dont throw away your old Circular Saw Plates, when you can have Teeth inserted in them at trifling expense, and make them better than new ones. We pay all charges to us, guarantee them against all breakage, grind and polish and true every saw, and put them in perfect order to run without extra charge. Only from six to ten days are required to do the job. Saws enlarged from 1½ to 2 inches in diameter.

Either the full number one-half, one-third or one-fourth of the number of teeth that are already in the saw must be inserted, or the teeth must all be cut off, then any desired number of teeth can be inserted; this, however, will reduce the saw from its original size.

If parties will send along their saws, and write to us, stating the kind of timber they wish to saw, and about the amount of feed that they wish to carry to each revolution of the saw, and allow us, after seeing the saw, to exercise our own judgment in selecting the size of tooth and the number suited to the saw, we will guarantee it to do the business satisfactorily. Our Mr. Emerson, who is the original inventor of Inserted Toothing Saws, and has had about thirty years' practical experience in both the use of saws of every description, and of inserting teeth in them, personally superintends our entire saw manufacturing, and knows just what is required.



Extra Teeth, 25 cents each. See page 27.

See Certificates on pages 59, 60 and 104 to 111.

LUMBERMAN'S CLIPPER TOOTH.

DESIGNED SPECIALLY FOR EXTRA THIN SAWS, not thicker than No. 6 Gauge at rim, nor thinner than No. 15, but thicker at center.

SEE LAST PAGE.

PRICE LIST

— OF —

LUMBERMAN'S CLIPPER.

Diam.	All Gauges to	Price.	Diam.	All Gauges to	Price.
12 in.	No. 11 at center	\$12 00	44 in.	No. 7 at center.	\$ 70 00
14 "	" 11 "	14 00	46 "	" 7 "	80 00
16 "	" 11 "	16 00	48 "	" 6 "	90 00
18 "	" 11 "	18 00	50 "	" 6 "	100 00
20 "	" 10 "	20 00	52 "	" 5 "	115 00
22 "	" 10 "	23 00	54 "	" 5 "	130 00
24 "	" 10 "	27 00	56 "	" 5 "	150 00
26 "	" 10 "	31 00	58 "	" 5 "	175 00
28 "	" 9 "	34 00	60 "	" 5 "	210 00
30 "	" 9 "	37 00	62 "	" 4 "	240 00
32 "	" 9 "	40 00	64 "	" 4 "	270 00
34 "	" 9 "	43 00	66 "	" 4 "	300 00
36 "	" 9 "	45 00	68 "	" 4 "	330 00
38 "	" 8 "	48 00	70 "	" 3 "	360 00
40 "	" 8 "	53 00	72 "	" 3 "	390 00
42 "	" 8 "	60 00			

One Tooth to every inch in the diameter of the Saw; to a 12 inch Saw, 12 Teeth; 54 inch Saw, 54 Teeth; 60 inch Saw, 60 Teeth; and so on.

The Saws are made from 2 to 5 gauges thicker at the center than at the rim, proportionately to the size.

OLD SAWS MADE INTO NEW ONES!

REDUCED PRICE LIST

**FOR INSERTING NO. 2½ LUMBERMAN'S CLIPPER OR
CALIFORNIA TEETH IN OLD SAWs.**

See Next Page.

No. 2½ Lumberman's Clipper Teeth have **2½** inches of face on the cutting edge.

		Price Per Saw.
All Sizes to 12 inch, any number of Teeth to 12..		\$11 00
Over 12 and to 14 .. "	"	14.. 12 00
" 14 .. "	16 .. "	16.. 13 00
" 16 .. "	18 .. "	18.. 14 00
" 18 .. "	20 .. "	20.. 16 00
" 20 .. "	22 .. "	22.. 17 00
" 22 .. "	24 .. "	24.. 18 00
" 24 .. "	26 .. "	26.. 19 00
" 26 .. "	28 .. "	28.. 20 00
" 28 .. "	30 .. "	30.. 21 00
" 30 .. "	32 .. "	32.. 23 00
" 32 .. "	34 .. "	34.. 25 00
" 34 .. "	36 .. "	36.. 26 00
" 36 .. "	38 .. "	38.. 28 00
" 38 .. "	40 .. "	40.. 30 00
" 40 .. "	42 .. "	42.. 32 00
" 42 .. "	44 .. "	44.. 34 00
" 44 .. "	46 .. "	46.. 37 00
" 46 .. "	48 .. "	48.. 40 00
" 48 .. "	50 .. "	50.. 43 00
" 50 .. "	52 .. "	52.. 46 00
" 52 .. "	54 .. "	54.. 50 00
" 54 .. "	56 .. "	56.. 55 00
" 56 .. "	58 .. "	58.. 60 00
" 58 .. "	60 .. "	60.. 65 00
" 60 .. "	62 .. "	62.. 70 00
" 62 .. "	64 .. "	64.. 75 00
" 64 .. "	66 .. "	66.. 80 00
" 66 .. "	68 .. "	68.. 90 00
" 68 .. "	70 .. "	70.. 100 00
" 70 .. "	72 .. "	72.. 110 00

N. B.—The above price includes the freight charges to us, but not the return charges. Also, our new Adjustable Swage for spreading the teeth. The Saw will be polished and put in perfect order to run.

~~✓~~ Saws will be measured from point to point of the teeth, after inserting. No extra charge for cutting down plates.

Emerson's Celebrated Patent Universal and Adjustable Saw Swage given with each Saw; or \$2.50 deducted from the price when parties furnish their own Swage.

CIRCULAR SAWS FOR SAWING SLATE.

Diameter.	Gauge.	Price.	Extra for each Gauge heavy.	Diameter.	Gauge.	Price.	Extra for each Gauge heavy.
14 inch	10	\$4.25	\$0.14	28 inch	5	\$14.25	\$0.53
16 "	10	5.25	.17	30 "	5	16.00	.60
18 "	9	6.75	.20	32 "	5	17.75	.67
20 "	8	7.75	.23	34 "	5	19.50	.80
22 "	7	9.50	.30	36 "	4	22.50	.93
24 "	6	11.00	.37	38 "	4	25.50	1.17
26 "	6	12.50	.43	40 "	4	30.00	1.33

No extra charge for Saws one gauge heavier than named in above list.

MILLING SAWS FOR METAL.

Diameter.	Gauge.	Size of Hole.	Number of Teeth.	Price.	Extra for each additional gauge heavy.
2 inch	22 x 20	½	48	\$1.40	\$0.02
3 "	22 x 20	½	64	1.70	.03
4 "	21 x 19	¾	76	1.90	.04
5 "	20 x 18	¾	88	2.30	.05
6 "	19 x 17	1	96	2.90	.06
7 "	18 x 16	1	104	3.35	.08
8 "	18 x 16	1	110	4.00	.10
9 "	17 x 15	1	116	5.00	.12
10 "	16 x 14	1¼	120	6.25	.15
12 "	16 x 13	1¼	134	7.75	.21
14 "	14 x 11	1½	148	10.00	.26
16 "	13 x 10	1½	160	12.00	.31
18 "	12 x 9	1¾	172	15.00	.38
20 "	11 x 8	1¾	184	18.50	.45
22 "	10 x 7	2	192	21.75	.55
24 "	9 x 6	2	200	25.75	.70
26 "	9 x 6	2½	208	31.00	.80
28 "	8 x 5	2½	214	34.50	1.00
30 "	8 x 5	2½	222	38.50	1.12
32 "	7 x 4	2½	228	44.00	1.25

PRICE LIST OF CONCAVE SAWS.

Diam.	Gauge.	Price each.	
4 in.	16	\$2 20,	5c. extra for each additional gauge.
6 "	16	2 20,	5c. " " "
7 "	15	2 60,	6c. " " "
8 "	15	3 10,	8c. " " "
9 "	15	3 60,	10c. " " "
10 "	14	4 50,	13c. " " "
12 "	14	5 90,	17c. " " "
14 "	13	7 20,	21c. " " "
16 "	13	9 00,	25c. " " "
18 "	12	10 75,	30c. " " "
20 "	12	13 50,	35c. " " "

All saws concaved to a smaller circle than 16 inches, extra price.

Extra Sizes Made to Order.

When ordering concave saws, give circle to be dished to; also, which side is to be dished or concaved, right or left-hand, saw running towards you.

PRICE LIST OF GROOVING SAWS.

Diam.	Thickness.	$\frac{1}{8}$ in.	3-16 in.	$\frac{1}{4}$ in.	5-16 in.	$\frac{3}{8}$ in.	7-16 in.	$\frac{5}{8}$ in.	each.
" 4 "	\$1 20	1 40	1 60	2 50	3 50	4 50	5 50		
" 5 "	1 55	1 75	2 10	3 00	4 00	5 00	6 00	"	
" 6 "	1 90	2 20	2 70	3 50	4 50	5 50	6 50	"	
" 7 "	2 30	2 70	3 30	4 00	5 00	6 00	7 00	"	
" 8 "	2 70	3 20	3 90	4 75	5 75	6 75	7 75	"	
" 9 "	3 30	3 75	4 50	5 25	6 25	7 25	8 25	"	
" 10 "	3 90	4 50	5 10	6 00	7 00	8 00	9 00	"	
" 11 "	4 50	5 10	5 70	6 50	7 50	8 50	9 50	"	
" 12 "	5 10	5 70	6 50	7 50	8 50	9 50	10 50	"	

Space of teeth, $\frac{1}{2}$ in. 1 in. 1 in. $1\frac{1}{4}$ in. $1\frac{1}{2}$ in. $1\frac{3}{4}$ in. 2 in.

Saws with less space or special teeth, extra price.

CIRCULAR MITRE SAWS.

These saws are ground to run without set; especially adapted for smooth cutting, such as Cabinet and Cigar-box work.

When ordering give size of centre hole, also diameter of collars on mandrel.

Size.	Gauge at hole.	Gauge at teeth.	Price each.
6 in.	19	16	\$3 50
7 "	19	16	3 75
8 "	19	16	4 00
9 "	18	15	4 75
11 "	17	14	5 25
12 "	17	14	5 75

Extra gauges heavy and bevelling will be charged for same as our regular Circular Saw list.

Price List of our \$100 Gold Premium
DAMASCUS TEMPERED CIRCULAR SAWS.

Dia-meter.	Thickness.	Price each.	Extra for each additional gauge (heavier).	Price for bevelling new saws (grind-ing or bevelling old saws, extra).
4 in.	19 gauge.	\$1 00	\$0 03	\$0 14 per gauge
5 "	19 "	1 20	04	16 "
6 "	18 "	1 40	05	18 "
7 "	18 "	1 70	06	20 "
8 "	18 "	2 00	08	22 "
9 "	17 "	2 50	10	25 "
10 "	16 "	3 00	12	28 "
11 "	16 "	3 50	14	30 "
12 "	15 "	3 75	17	35 "
14 "	15 "	4 50	21	40 "
16 "	14 "	5 50	25	50 "
18 "	13 "	7 00	30	60 "
20 "	13 "	8 50	35	70 "
22 "	12 "	10 00	45	80 "
24 "	11 "	12 00	55	90 "
26 "	11 "	14 00	65	1 05 "
28 "	10 "	16 00	80	1 20 "
30 "	10 "	18 00	90	1 30 "
32 "	10 "	20 00	1 00	1 40 "
34 "	9 "	22 50	1 20	1 55 "
36 "	9 "	25 50	1 40	1 70 "
38 "	9 "	30 00	1 75	1 85 "
40 "	9 "	35 00	2 00	2 00 "
42 "	8 "	42 00	2 50	2 20 "
44 "	8 "	50 00	3 90	2 40 "
46 "	8 "	60 00	3 50	2 60 "
48 "	8 "	70 00	4 00	2 80 "
50 "	7 "	80 00	4 50	3 00 "
52 "	7 "	90 00	5 00	3 25 "
54 "	7 "	100 00	6 00	3 50 "
56 "	7 "	115 00	7 00	3 75 "
58 "	7 "	130 00	8 00	4 05 "
60 "	6 "	145 00	9 00	4 35 "
62 "	6 "	160 00	10 00	4 65 "
64 "	6 "	180 00	12 00	5 00 "
66 "	6 "	200 00	15 00	5 35 "
68 "	5 "	225 00	18 00	5 75 "
70 "	5 "	255 00	21 00	6 15 "
72 "	5 "	290 00	24 00	6 55 "
74 "	5 "	330 00	27 00	7 00 "
76 "	5 "	375 00	30 00	7 50 "

No extra charge for saws one gauge thicker than list. Circular Saws beveled one gauge without extra charge up to 44 inches; 44 inches and larger, beveled two gauges without extra charge. Circular Saws 48 inches and larger, if made thinner than 10 gauge, are not warranted. Add 10% to list for each gauge thinner than 10 gauge.

Circular Top Saws for Double Mills.

Same price as Solid List with Extra Gauges added.

We have special and superior facilities for the manufacture of CIRCULAR SAWS IN GANGS with mandrels and separating washers for any kind of Gang Sawing, such as DOVETAILING, LATH, BOLTING, etc., etc., and furnished at special prices.

EXTRA THIN CIRCULAR SAWS.

PATENT TAPER GROUND.

As year by year timber becomes more valuable, thinner Saws are sought for. Having special facilities for the manufacture of EXTRA THIN CIRCULAR SAWS FOR BOARD MILLS, we are prepared to receive orders for Circular Saws as follows:

To 54 inches in diameter; as thin as No. 12 Gauge at the rim, and 11 at the center; 54 to 56 inches in diameter as thin as No. 11 Gauge at the rim, and 10 at the center; 66 to 72 inches in diameter as thin as No. 10 Gauge at the rim, and 9 at the center.

In extra thin Saws it is necessary to use a larger number of teeth than in thicker ones. No larger collars are required for thin than for thicker Saws.

For the past few years we have been giving the subject-matter of extra thin Circular Saws our special attention, and our unparalleled success has induced us to more extensively recommend them to consumers.

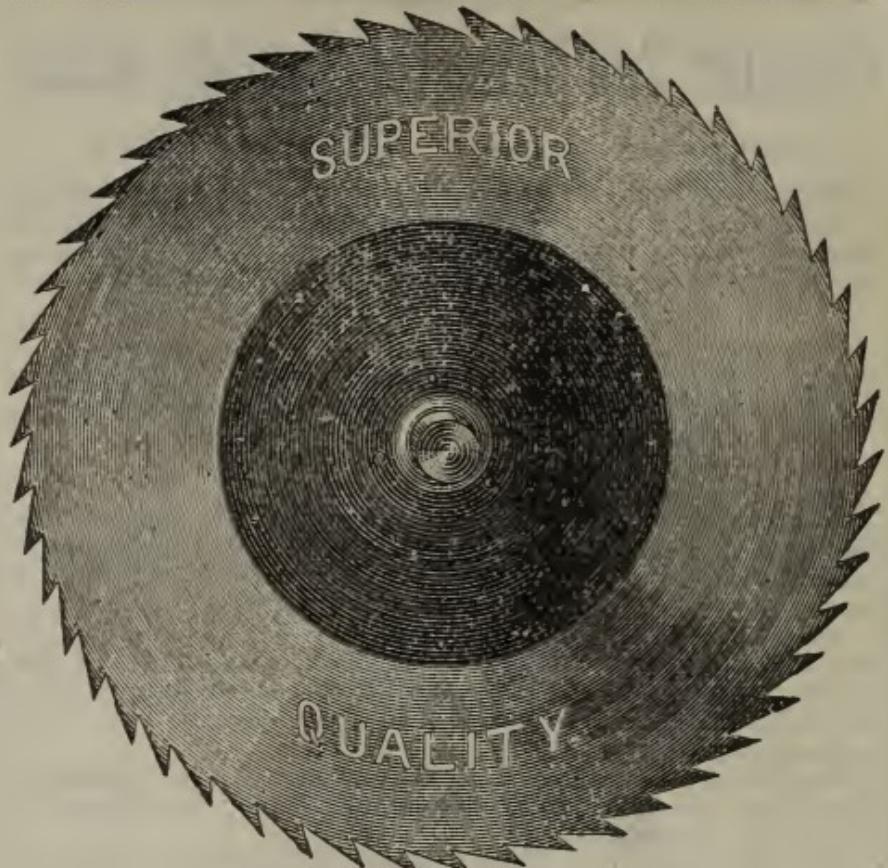
Our superior facilities for their manufacture consists—

First.—EVENNESS OF TEMPER—The peculiar structure of our furnace subjects all parts of the Saw to a DEAD heat, and when dipped in the tempering bath, secures perfect uniformity.

Second.—PERFECT ACCURACY IN THICKNESS—Our Saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the Saw is removed, BALANCES PERFECTLY, which is proof positive of perfection.

Third.—PROPERLY HAMMERED—Great care is taken that no Saw shall leave our works without due attention in this important particular. A Saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run; hence the importance of so hammering the Saw as to produce equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of Mr. J. E. Emerson, who has had more than thirty years of practice in the use and manufacture of Saws.

Every sixteenth of an inch saved in the width of Saw kerf, saves 1,000 feet of the lumber in every sixteen sawed.



PROPER SPEED OF SAWS, page 70.

WARRANTED.

Extra Cast Steel Shingle and Heading Saws.

(Tapered to Nos. 14, 15 or 16 Gauge—Patent Ground.)

Warranted Extra Cast Steel Shingle Saws.

18 in.	\$9 00	28 in.	\$23 50	38 in.	\$44 00	48 in.	\$100 00
20 "	11 00	30 "	29 00	40 "	50 00	50 "	115 00
22 "	13 00	32 "	32 00	42 "	60 00	52 "	135 00
24 "	15 00	34 "	35 00	44 "	72 00	54 "	155 00
26 "	18 00	36 "	38 50	46 "	85 00	56 "	175 00

SEE LAST PAGE.

Cast Steel Collars and Stiffeners.

Half-inch thick at centre, provided with a cast-iron hub at the centre to fit any mandrel for shingle or other tapered saws, which we furnish at the same price as cast-iron, and they are much superior, will not break, and more durable in every way.

PRICE, 75 CENTS PER INCH IN DIAMETER.

PRICE LIST

OF

Patent Planer Saw Bits.

BE SURE AND GIVE THE NUMBER OF THE SAW.

100 points, in perfect order.....	\$3 00
500 " " "	15 00
1,000 " " "	30 00
Or 3 cents each by the 1,000.	
Duplicate Mouth-Pieces, each.....	50
Wedges, "	10

PRICE LIST

OF

Extra Teeth for Emerson's Patent Saws.

BE SURE AND GIVE THE NUMBER OF THE SAW.

No. 1 Patent Flange Tooth, $3\frac{1}{2}$ in. on cutting face.....	\$0 50
" 2 " " " 3 " " "	50
" $2\frac{1}{2}$ " Clipper, Flange Teeth, 3 inches on cutting face.....	50
" $2\frac{3}{4}$ Patent Lumberman's Clipper Flange Teeth, $2\frac{1}{4}$ in. on cutting face....	25
" 3 Patent Flange Teeth, $2\frac{1}{4}$ in. on cutting face.....	25
" 4 " " " $1\frac{3}{4}$ " " "	20
Universal Clipper Teeth.....	35

 In ordering Extra Teeth, be sure to give the number that is stamped on the Saw. We keep a record of every Saw that we make with Inserted Teeth. All Extra Teeth (unless remittance is made by postal order, registered letter, or by draft on New York, with the order), will be sent to collect on delivery.

WARRANTED CAST STEEL MILL SAWS.

EXTRA TEMPERED—PATENT GROUND.

No. 5 Gauge, 8 inches wide...	\$2 00 per foot.	No. 8 Gauge, 8 inches wide	\$1 60 per foot.
" 6 " " "	" 1 90 "	" 9 " "	" 1 50 "
" 7 " " "	" 1 75 "	" 10 " "	" 1 40 "
" 8 " " "	"	" 8 " "	"

WARRANTED CAST STEEL MULAY MILL SAWS.

EXTRA TEMPERED—PATENT GROUND.

GAUGE.	per foot,	4	5	6	7	8
10 in. wide.....	\$2	85	\$2	50	\$2	20
" "	"	3 20	3 00	2 75	2 50	2 20
" "	"	3 50	3 20	3 00	2 75	2 50
11 "	"	"	"	"	"	"
12 "	"	"	"	"	"	"

**GANG SAWS.**

Nos. 10 and 11 gauge, 8 in. wide . . .	\$1 10 per ft.	9 in. wide . . .	\$1 20 per ft.	10 in. wide . . .	\$1 30 per ft.
" 12 " 13 "	8 "	9 "	10 "	10 "	11 "
" 14 " 15 "	8 "	9 "	10 "	10 "	11 "
" 13 " 14 "	7 "	8 "	9 "	10 "	11 "
" 15 " 16 "	7 "	8 "	9 "	10 "	11 "

Tabling 4 hole Tab 40c.; 5 hole, 50c.; 6 hole, 60c.; and Wilkin's Tab, 60c. per saw.
5 cents per foot added to list if swaged. 10 cents per foot added to list if swaged ready for use.

**WARRANTED CAST STEEL BUTTING OR DRAG SAWS.**

Tapered 10 in. butt, 8 in. point, No. 8 gauge, \$1 45 per ft.	Tapered 8 in. butt, 6 in. point, No. 10 gauge, \$1 15 per ft.
" 10 " 8 "	9 "
" 9 " 7 "	8 "
" 9 " 7 "	9 "

In ordering Drag Saws, state whether Mill or Cross-Cut are wanted. If set and sharpened, 5c. per foot extra.

30 EMERSON, SMITH & CO. (Limited),

DRAG SAWS OF EQUAL WIDTH.

	8 in.	9 in.	10 in.	12 in. wide.
No. 10 gauge, . . .	\$1.30	\$1.40	\$1.60	\$1.80 per foot.

Saws over 7 feet long, use Lance Tooth List.

LANCE TOOTH DRAG SAWS.

	9 in.	10 in. wide.		12 in.	14 in. wide.
8 gauge, .	\$1.80	\$2.00 per ft.	7 gauge,	\$2.75	\$3.30 per ft.
9 " "	1.60	1.80 "	8 "	2.40	3.00 "
10 " "	1.40	1.60 "	9 "	2.20	2.70 "

Saws over 8 feet long, extra price.

GANG SAWS!

PROVIDED WITH

Emerson's Improved "Samson" Tab Straps.

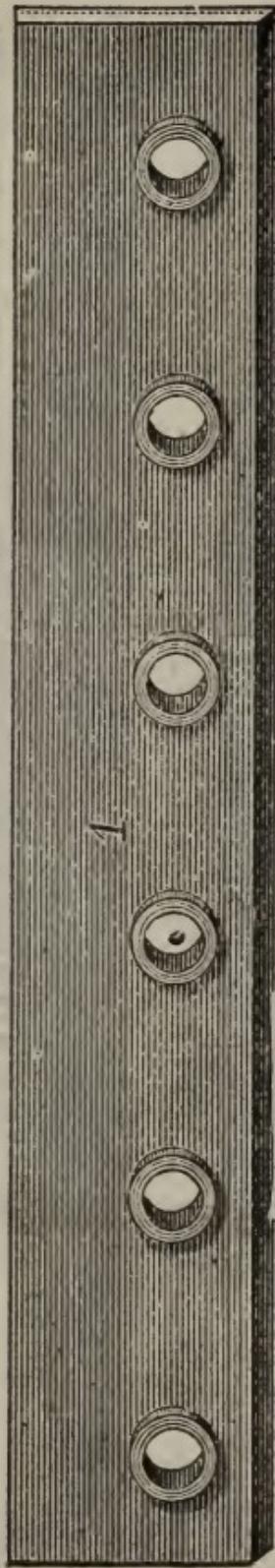
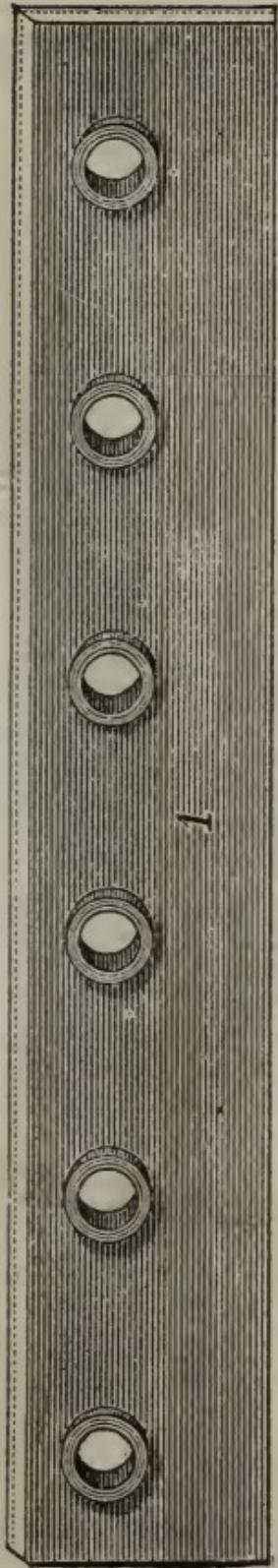
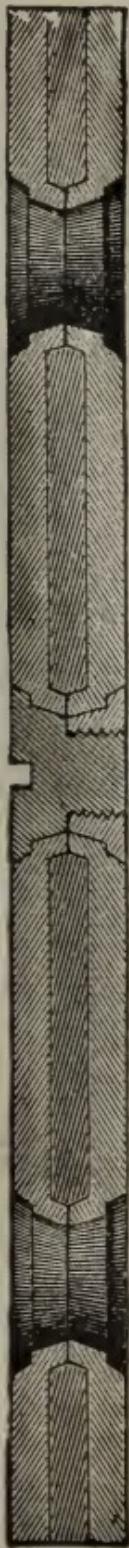
PATENTED APRIL 22d, 1884.

SEE ILLUSTRATION, PAGE 31.

Superior Damascus Tempered Silver Steel

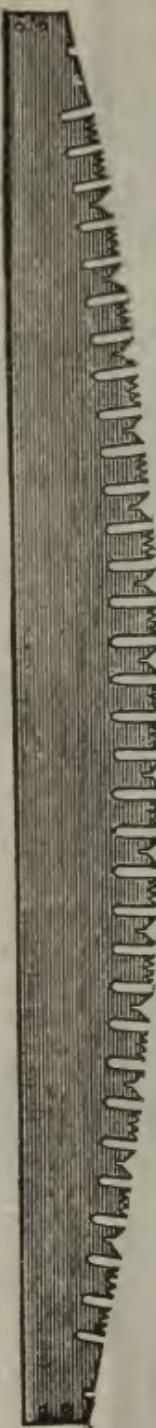
GANG SAWS.

Furnished with our Improved "**SAMSON**" TAB STRAPS. Our superior facilities for turning out the most perfect work in gangs that has ever been done, enables us to offer them of a quality and at a price that will defy competition. We most respectfully solicit your NEXT ORDER ; or at least, BEFORE ORDERING, that you favor us with an opportunity to quote you our special prices. Our improved process of tabbing, so perfectly illustrated by our artist, scarcely requires any explanation, and the only query by all who have seen it, is : "Why didn't some one think of it before?" IN QUALITY WE CANNOT BE EXCELLED ; and this being taken into consideration, we can DEFY COMPETITION.



The upper figure shows a section of the two Tabs closed together on a Gang Saw of full thickness, and socket screws full size.

Figures 1-1 show the Cast-steel Tab Straps with the flanges formed, and beveled edges made to receive the buckle with countersunk recesses on the opposite sides, all formed at a single blow in a hardened steel die, while hot and under a drop press, and made absolutely perfect and interchangeable. Imagine the upper Strap turned down on the lower one, and bevelled edges together, when they form the Tab Plates on the end of the Saw.

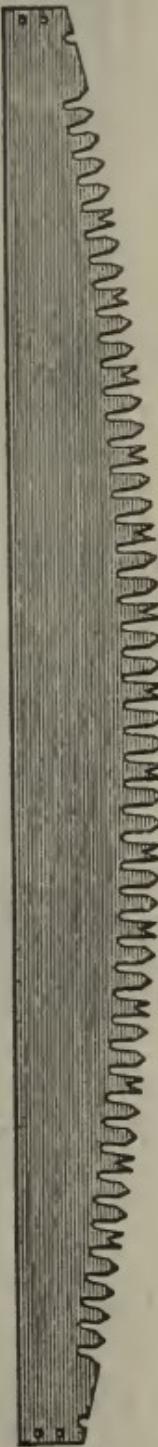


OUR PATENT TWIN CLIPPER GRADUATED GULLET SAW, \$0 60 per foot.



CLEARER TOOTHED SAW.

Set and sharpened, taper ground, extra quality \$0 55 per foot.



IMPROVED PEG TOOTHED SAW, WITH CLEARERS.

This Saw is preferred by many on account of the ease with which it is filed and kept in order.

Price—set, sharpened and filed, ready for use, and taper ground \$0 60 per foot.

Remember that we use none but extra quality steel. No second, third or fourth quality.

EMERSON'S PATENT DOUBLE CROSS-CUT NARROW BLADE SAW.

PATENTED SEPTEMBER 9, 1884.

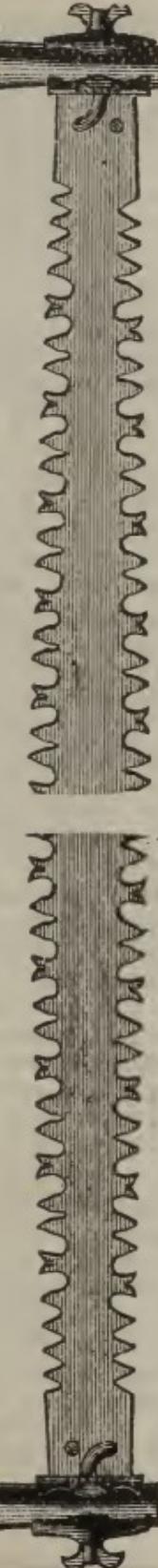
This is the greatest improvement ever made in a Cross-cut Saw. Every purchaser of this Saw gets Two Saws in One at about the price of a single Saw.

ONE SIX FOOT NARROW BLADE DOUBLE CROSS CUT SAW.

MARION, South Carolina, March 12, 1889.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—Saw arrived several days ago. I am well pleased with it; don't think it has any equal.
Yours respectfully,
H. T. YOUNG.



Both sets of Teeth are filed ready for use. The teeth on one edge of the saw only are set. It is designed to use the one set of teeth until they are worn too short for use; then knock out the set on the worn out edge, and set those on the opposite edge, which only occupies a few minutes time, and you have a new saw. The saw is made reversible on the accommodation handles, so that when turned over, it is the same on both sides. You have actually Two SAWS IN ONE with but TRIFLING ADDITIONAL COST.



The illustration represents a Narrow Blade Cross-Cut Saw, made reversible in its handles, slightly curved and toothed at both edges. The longer Saws being a little wider than the shorter ones, varying from $3\frac{1}{4}$ inches in width, for the short Saws, to 4 inches in width, for the largest Saws, (measuring from the extreme points of the teeth across the centre of the Saw); and from 2 to $2\frac{1}{4}$ inches wide across the ends, and all No. 14 gauge steel, and of uniform thickness throughout.

We have adopted that style of tooth which, after years of experimenting by saw makers and by the most practical sawyers, and also after sawing all kinds of timber, in every climate, has proved to be the **BEST AND EASIEST TO KEEP IN ORDER**, and has superceded nearly everything else that has been in use. This Saw is perfectly adapted for both hard and soft timber. The size and shape of tooth being a medium size between the largest and smallest, or coarsest and finest Saw made, we therefore make no change or variation in size or shape of this particular style of tooth for all Saws that we manufacture.

The curve given to each length of Saw is that which gives **THE GREATEST STRENGTH** possible; so that every Saw is warranted to **BEND DOUBLE** with no injury whatever to the Saw.

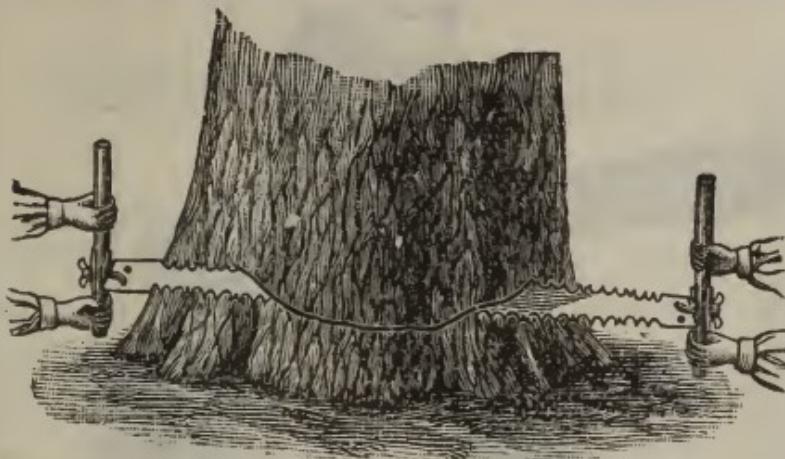
1st. It is the cheapest Saw on the market, because the purchaser gets **TWO SAWS** in purchasing only one.

2d. It will not cripple when crowded, and cut wavy like the narrow blade, rainbow-shape Saw, which is made of uniform width and curved, which always cripples and stutters when the ends are pressed upon in the operation of sawing.

3d. It possesses all of the advantages of not binding in the cut, which are claimed for the narrow blade, rainbow Saw, and it is better because less liable to cripple and will bear crowding.

4th. It is the **BEST SELLING SAW** ever offered on the market, because of its novelty and superior advantages which are so apparent to the purchaser.

5th. We use the very finest Silver Steel, and have the **RARE ADVANTAGE** of **NATURAL GAS** in heating and tempering. This gas being found to contain **NO SULPHUR** or other base properties so injurious to the quality of steel. It being composed of nearly all Hydrogen Gas, the steel will not oxydize as it does when heated by coal fire. Therefore, all tools and implements heated with natural gas possesses a **TOUGHNESS** not attainable by any other method of heating.



The above cut shows the saw with the handle angled with the face of the blade and the hands in the proper or easiest position for sawing down trees. The blade being so narrow that notwithstanding the kerf may entirely close together by the action of the wind on the tree, or of the tree leaning, the saw will pass right through the tree WITHOUT BINDING.

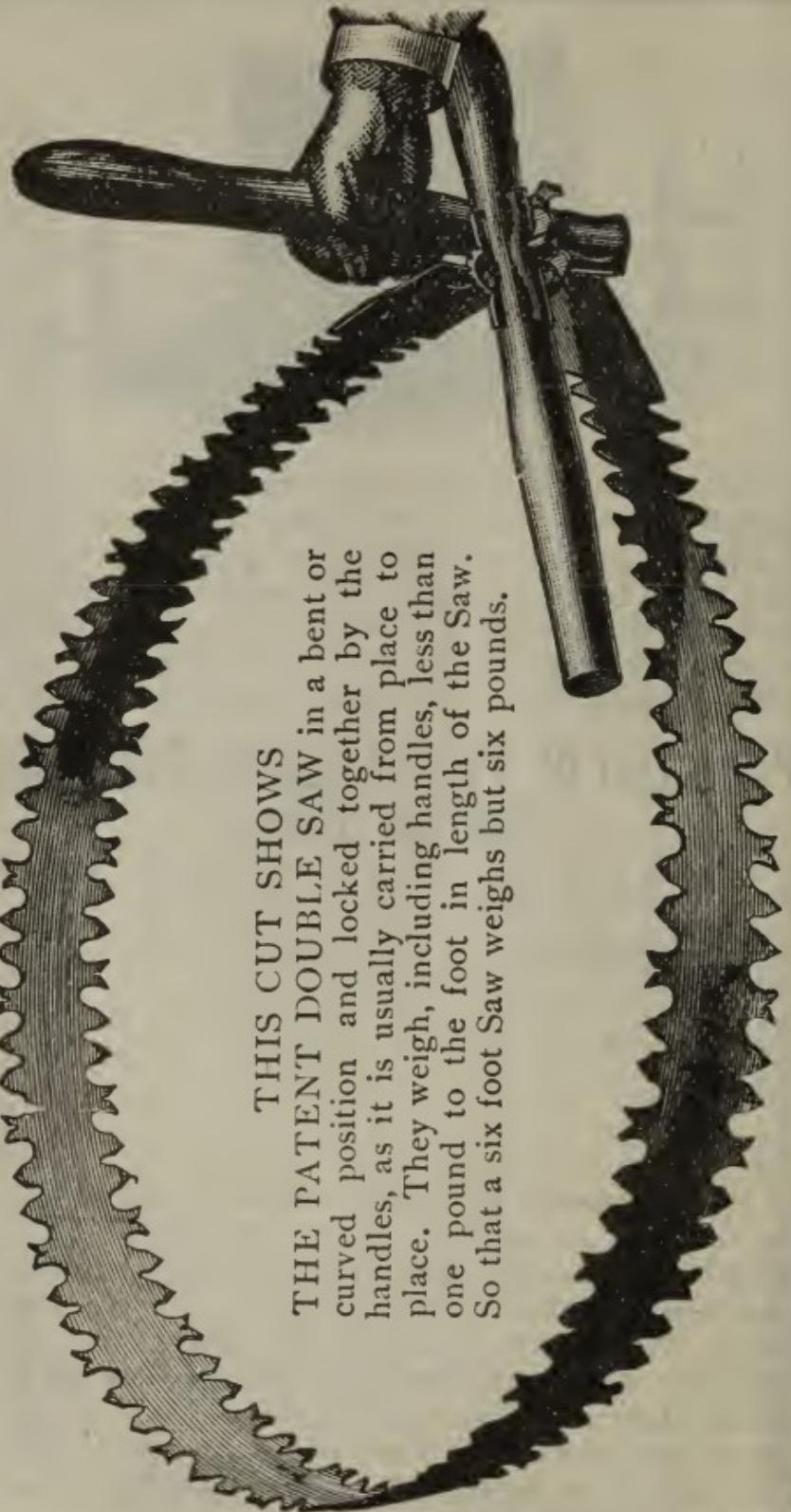
Price List of Patent Double Cross-Cut Narrow Saws.

Including a pair of Patent Adjustable Handles with each Saw. Both set of teeth are filed and one edge set.

Each Saw.

4 feet in length with one pair adjustable handles,....	\$2.50
4 $\frac{1}{2}$ " "	2.65
5 " "	2.85
5 $\frac{1}{2}$ " "	3.10
6 " "	3.40
6 $\frac{1}{2}$ " "	3.70
7 " "	4.00
7 $\frac{1}{2}$ " "	4.30
8 " "	4.60

These Saws are made with the two standard holes, for handles, at each end of the Saw; being two $\frac{1}{4}$ inch holes, one inch apart from centre to centre, and one inch from the end of the Saw to the centre of each hole. We prefer to furnish the Patent Adjustable Handles with each Saw sold, because they are perfectly adapted to this special Saw, which is designed to be used for every kind of work that a Cross-Cut Saw is intended, viz.: For framing timbers, saw logs or felling trees.



THIS CUT SHOWS
THE PATENT DOUBLE SAW in a bent or
curved position and locked together by the
handles, as it is usually carried from place to
place. They weigh, including handles, less than
one pound to the foot in length of the Saw.
So that a six foot Saw weighs but six pounds.

DIRECTIONS FOR SHARPENING.

This cut represents the triangular or three-sided file, ten inches in length. The widest side of the file is used in sharpening the outer edges of the teeth, while the two short angles are used to sharpen both points at one operation. One of these files, which costs only 50 CENTS, will last for one year, to file the Saw for constant use. Any ordinary flat mill or taper file may be used, however, if desired. The Saw should be well jointed off, and the points set evenly; and the sides of the teeth jointed off with an oil or whetstone.

Any ordinary Carpenter's Saw Set may be used to set Cross Cut Saw Teeth.

The clearer teeth must be a little less than 1-16 of an inch shorter than the scorers.



PRICE LIST

OF

TRIANGULAR OR SPECIAL FILES,

Made and furnished expressly for the Twin Clipper Saws. They are all made ten inches in length, and of fine quality.

Price, per doz.....	\$5 00
" " half-dozen.....	2 75
" " single file...	50



PLANER TOOTHED SAWS.

(See pages 57 to 59, and 92 to 104.)

NEEDY, CLACKAMAS CO., OREGON, May 13, 1890.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Planer Saw we purchased of you through Messrs. Curtis & Co., of St. Louis, just "astonishes the natives." The way it goes through this Oregon Fir is a caution. Saw mill men here said that it was no use to try to cut this timber without first damming the logs. *i.e.*, soaking them in a mill pond, but we find that with a Planer Saw one need not "dam (?) the logs nor the saw either. Our saw is a 52-inch 7 x 8 gauge. We have a 10 H. P. Farm Engine, and cut from 2,500 to 3,500 feet in a day. The "Planer" is the thing for light power. Yours truly,

J. S. YODER.

LINDEN, Penna., July 3, 1891.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Enclosed find nine dollars, for which please send me 300 bits for 56-inch Planer Saw, No. 8,745. We had the misfortune to get a piece of timber land that years ago had been used for a Methodist Camp Meeting Ground. Many of the logs had nails in them, and we cut one log with fourteen nails in it, that I think was the tree that the preachers hung their coats on. It may seem strange to you, but the teeth that you sent cut those fourteen nails off in one cut, and you could hardly see a particle of harm done to the teeth. Now I don't know whether it was the preachers' coats drew the hardness from the nails or whether it was the excellent quality of steel in the teeth. The latter perhaps.

Yours respectfully,

J. L. CAMPBELL.

LANCASTER, Wisconsin, Oct. 29, 1891.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penna.

GENTLEMEN:—The saw mill that I bought from The Aultman & Taylor Co. in the fall of 1889, is a double Pony, with a 48-inch Planer Toothed Saw for lower saw, and a 30-inch solid top saw. I run it with a 12 horse power engine, and saw all hard wood lumber. When I got the saw the boys all around made fun of me, saying: "What was I going to do with such a big saw mill, and such a small engine? They said that I did not know anything"; but when the saw started they stopped talking, and changed their programme. The saw gives entire satisfaction. Yours truly,

AUGUST KROENING.

STATION 15, OHIO, January 27, 1890.

Messrs. EMERSON, SMITH & CO.

SIRS:—Enclosed please find five dollars, for which send me Planer Saw Teeth for 54-inch 7x8 gauge saw. Please send them immediately, as I am just out, last set in the saw, and they are nearly worn out. The last set sawed a little over 40,000 feet. The set now in has been sawing hickory and frozen mud, and will still reach 30,000 feet. How can they be beat? 90 cents worth of teeth to saw 30,000 feet of hard hickory, frozen mud and lumber, &c., a man that would complain of this work would growl at his mother-in-law dying. Yours truly,

JAMES H. HATREWAY.

PLEASANT HILL, Mo., Feb. 3, 1890.

Messrs. EMERSON, SMITH & CO.

SIRS:—The 50-inch Planer Toothing Saw I ordered of you is at hand, and has been in use for some two weeks, and is giving the best of satisfaction. Parties say that they can cut from 800 to 1,200 feet more per day than they could with the solid saw. They use a 10 horse power engine. Yours,

L. M. VANSICKLE.

NEWWAY, Licking Co., Ohio, May 28, 1891.

Messrs. EMERSON, SMITH & CO.

Please send me 100 teeth for my saw, No. 2,511. I have been running one of your Planer Saws for fifteen years, and it is in good order yet. Yours,

OTIS WHEELER.

FROST, Maryland, March 2, 1891.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—We have run your Planer Saw (48-inch) now for eight years, and have cut an immense amount of lumber with it, and have never spent a five cent piece on it for repairs. We expect to send it to you, as soon as we can spare it, to have new mouth pieces put in all around, as from constant friction of saw-dust they have worn very thin. Respectfully,

FROST & HETSCHEL.

WINNSBORO, South Ca., Feb. 22, 1891.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penna.

DEAR SIRS:—Your 48-inch Planer Toothing Saw has been received and thoroughly tested in every respect, and I find it up to expectation, and more than I thought it would be. I have run it fast and slow, with regular and irregular feed, and find that it works equally well in all circumstances. I don't want any better saw. The bits have never become loose, and I only use thirteen cutting bits and thirteen worn ones in alternate spaces. The wedges and mouth pieces are as good as ever; no trouble to get the bits out and in. I have cut about fifty thousand feet, and haven't missed nor cut a crooked line. Never moved a guide; don't need any guides at all, as the blade never touches the guide at all.

Yours very truly, E. TENNANT.

Mr. Tennant is sawyer and general mill manager for Mr. T. K. Elliott of Winsboro.

SPRINGVILLE, New York, April 15, 1890.

Messrs. EMERSON, SMITH & CO.

SIRS:—Find draft for five dollars, for which send teeth for Planer Toothing Saw, six and seven gauge. I have used your Planer Saw for the past seven years in all kinds of timber, and find that it is all that you claim for it. I think that I have saved the price of it in files, and can cheerfully recommend it to all using circular saws.

Yours truly, JESSE FRYE.

THETA, North Carolina, May 18, 1890.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have received, with a mill I bought of Aultman, Taylor & Co., of Mansfield, Ohio, one of your Standard Inserted Toothing Saws, and she is a "dandy." I am averaging 10,000 feet per day with a 20 H. P. engine. Yours truly,

D. D. FREEBORN.

OUR BUSY MONTHS ON REPAIRS.

 FEBRUARY, MARCH, and APRIL, of each year, are our most busy months, specially March. During this period we are generally flooded with saws for repairs. We prepare as much as possible for this season by the manufacture of new work, but even with all the preparation we can possibly make, and all the new work that we can prepare, special orders are about sure to crowd us at this season.

WE THEREFORE RESPECTFULLY REQUEST all of our friends who shut down their mills in the Fall and during WINTER, to look over their saws, and if NEW SAWS will be wanted, or REPAIRS made for SPRING, to ship us all saws needing repairs. We will ADVANCE ALL FREIGHT CHARGES, make all necessary repairs before our busiest season, and, if desired, store the saws in our large wareroom, ready for shipment at any time, subject to the ORDER OF THE OWNER. By so doing, our customers will save the liability of any delay in transportation or otherwise, and also confer a great favor on us.

Also, if special orders for new saws are given ahead, we will make and hold them in our wareroom, subject to order.

PREPAYING FREIGHT CHARGES ON SAWS FOR REPAIRS IS UNNECESSARY.

We make no Charge for Cartage.

We pay all Freight or Express charges on Saws and add it to the bill of Repairs.

Unless ordered by Express, we ship by Freight and collect the bill for repairs when the Saws are delivered to any part of the United States, thus saving Express charges.

After Saws have been gummed two or three times, no matter how it is done, with file, burr gummer or an emery-wheel, they will require hammering before they will run properly.

If a press gummer is used, they should be hammered every time they are gummed.

N. B.—Be sure and put your name on Packages, so that they may be identified, and advise us by mail when shipments are made.

RATES OF REPAIRING SAWS.

CIRCULAR SAWS—Gummed and Hammered.

	Per inch in diam.
All sizes to 20 inches	\$0 08
" over 20 inches to 30 inches.....	10
" " 30 " 40 "	12
" " 40 " 50 "	15
" " 50 " 60 "	22
" " 60 " 72 "	28

Re-toothing, 25 per cent. extra,

If Hammered only, two-thirds of the above list.

MILL SAWS.

Gummed and Hammered, each	\$1 75
Hammering, "	1 00

MULAY SAWS.

Gummed and Hammered, each	\$2 00
Hammering, "	1 25

TAPER-GROUND SAWS FOR SHINGLES, ETC.

30 to 36 inches, Gummed and Hammered.....	\$0 15
" Hammered only	10
36 to 40 inches, Gummed and Hammered.....	20
" Hammered only... ..	12
40 to 46 inches, Gummed and Hammered.....	22
" Hammered only.... ..	15

CROSS CUT SAWS.

Gummed and Hammered, per foot	\$0 15
Hammering, "	10
Setting and Sharpening, "	10

N.B.—Breakage in repairing at the owner's risk, except in case of carelessness, then we incur the loss.

TERMS OF WARRANTY.

Each saw is warranted perfectly true, or as true as it is possible to make it, free from flaws and seams. If found to be defective in any of these particulars, it may be returned, and if on examination we are satisfied the saw is at fault, all necessary repairs will be made free of charge, or a new saw given in exchange, provided it is returned within thirty days from delivery.

The practice of using a cold chisel or punch, for re-toothing a saw, is almost certain to distort or crack the plate, and corners filed square in the gullet of the tooth will frequently produce the same result, particularly in frosty weather. Our warranty does not cover saws breaking from either of these causes.

BURNT SAWS

That have been through a FIRE may be made as good as new by being re-tempered by our improved process, which we denominate our DAMASCUS TEMPER.

OUR PRICE FOR RESTORING BURNT SAWS

will be in accordance with the amount of work done. Generally, however, our charges will be *double* that of our regular repair list ; and in *no instance*, more than one-third the list-price of a new saw of the same size and style.

The Saw will be re-tempered, re-ground, polished and put in perfect order for business.

Parties wishing Patent Teeth inserted will be charged one-fourth above our regular list-price for inserting teeth.

We assume no risk beyond our own labor in breakage. If a burnt saw breaks in the course of repairs so as to render it worthless, we make *no charge* for our labor up to the time of such breakage.

For some years, since adopting our new process with burnt saws, our success has been very satisfactory, and we may say, extraordinary ; almost every saw has been made nearly as good as new.

Extra Thin, Taper-Ground, Mill, Mulay, Gang, Drag, or Cross-Cut Saws, that have been through a fire are generally worthless. We would advise parties having such to describe their condition as nearly as possible, by letter, and we will advise them by mail, if, in our opinion, they will be worth the repairs

HORNELLSVILLE, N. Y., March 30, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penna.

GENTLEMEN :—Sometime last summer I sent you a 60-inch burnt circular saw for you to work over. It has not been used until lately, and it works better than ever before.

Yours truly, C. K. MASON.

KINZUA, Penna., Feb. 18, 1886.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

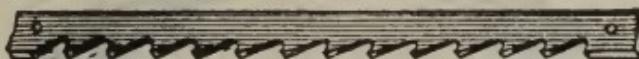
GENTLEMEN :—I enclose you check for repairing saw and would like to say that I consider the saw as good as new, in fact it is doing better work than the new saws of another make that took the place of the burned saws. Yours truly, J. TATE.

NOTE :—The above is in relation to a 58-inch, 7x9 gauge, 54 toothed burned solid saw.

WARREN, Arkansas, April 17, 1889.

Messrs. EMERSON, SMITH & CO. (Limited).

GENTLEMEN :—The 54-in. H. Disston & Son burned saw that you retempered for us runs better than it did before it got burned. We put it on the mandrel without putting a swage or file on it just as it came from the factory, and it has done good work. Respectfully, BAILEY, SHIREY & CO.



SCROLL SAWS. SCROLL SAWS.

Something New.

These Saws are all ground on a special machine, and tapered very thin on the back. Thus the trouble of setting Scroll Saws is entirely obviated. They are made from steel of superior quality, and are of our celebrated Damascus temper, and remarkable toughness. They are tapered as shown in the cut, to the cutting edge of the teeth, and do smoother work than any other Saw.

Price for all Saws from $\frac{1}{8}$ to $\frac{1}{2}$ inch wide, 2 cents per inch.
" " " " $\frac{5}{8}$ to 1 " " $2\frac{1}{2}$ " "

A large stock always on hand. When remittance is made with order, either in Registered Letter, Postal Order or Express, we will send them prepaid by mail. Be sure to give full directions for shipping.

LENGTHS KEPT IN STOCK.

INCHES IN LENGTH.

6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 22, 24.

Odd lengths made to order will be charged extra, unless for one dozen or more of same length and width.

NATURAL GAS

Process for Tempering,

Patented Oct. 9, 1883.

OUR BAND SAWS

(See Certificates, pages 117 and 118).

(In competition with the French Saws),

WON THE

\$100.00 GOLD PREMIUM

AT CINCINNATI, SEPT., 1874.

BAND SAWS

— FOR —

BOARD SAW MILLS

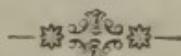
— AND —

Re-Sawing Machines

MADE TO ORDER.

SPECIAL NOTICE.

We do not build, neither do we furnish, Band Saw Mills, nor any part of the machinery for operating them, but confine ourselves strictly to the manufacture of Saws. Wheels for Nos. 16 and 17 gauge Saws should not be less than six feet in diameter; for 18 and 19 gauge, 5½ feet; 20 to 24 gauge, 4 to 5 feet.



No. of teeth to the inch, width
and gauge of band saws.

GAUGE 19 & 20.

19 & 20.

13

1 $\frac{1}{8}$ "
WIDE

GAUGE 19 & 20.

12

1 $\frac{1}{4}$ "
WIDE

GAUGE 19 & 20.

11

1 $\frac{1}{8}$ "
WIDE

GAUGE 20 & 21.

10

1"
WIDE

GAUGE 20 & 21.

9

$\frac{7}{8}$ "
WIDE

GAUGE 20 & 21.

8

$\frac{3}{4}$ "
WIDE

GAUGE 21.

7

$\frac{5}{8}$ "
WIDE

GAUGE 21.

6

$\frac{1}{2}$ "
WIDE

GAUGE 21.

5

$\frac{3}{8}$ "
WIDE

GAUGE 21.

4

$\frac{5}{16}$ "
WIDE

GAUGE 21.

3

$\frac{1}{4}$ "
WIDE

GAUGE 22.

2

$\frac{3}{16}$ "
WIDE

GAUGE 22.

1

$\frac{1}{8}$ "
WIDE

REDUCED PRICE LIST

— OF —

Band Saw Blades

PER RUNNING FOOT.

Giving the widths kept in stock at all times, from which orders
can be filled promptly.

 NOT SET OR FILED.

$\frac{1}{8}$	usual gauge	.....	22	.....	\$0 07	per running foot.
3-16	" "	.....	22	.....	07	" "
$\frac{1}{4}$	" "	.....	21	.....	07	" "
5-16	" "	.....	21	.....	08	" "
$\frac{3}{8}$	" "	.....	21	.....	08	" "
$\frac{1}{2}$	" "	.....	21	.....	10	" "
$\frac{5}{8}$	" "	.....	21	.....	12	" "
$\frac{3}{4}$	" "	..	20 to 21	.....	14	" "
$\frac{7}{8}$	" "	..	20 to 21	.....	16	" "
1	" "	..	20 to 21	.....	18	" "
1 $\frac{1}{8}$	" "	..	19 to 20	.....	20	" "
1 $\frac{1}{4}$	" "	..	19 to 20	....	23	" "
1 $\frac{1}{2}$	" "	..	19 to 20	....	28	" "
2	" "	..	17 to 19	.....	50	" "
2 $\frac{1}{2}$	" "	..	17 to 19	.....	65	" "
3	" "	..	17 to 19	....	80	" "
3 $\frac{1}{2}$	" "	..	17 to 19	....	1 00	" "
4	" "	..	16 to 19	.....	1 20	" "
4 $\frac{1}{2}$	" "	..	16 to 19	.....	1 35	" "
5	" "	..	16 to 19	.....	1 50	" "
5 $\frac{1}{2}$	" "	..	16 to 19	.....	1 65	" "
6	" "	..	15 to 19	....	1 80	" "
7	" "	..	15 to 19	....	2 15	" "
8	" "	..	14 to 17	.....	2 50	" "
9	" "	..	14 to 17	....	3 00	" "
10	" "	..	14 to 17	....	3 50	" "
11	" "	..	14 to 17	....	4 20	" "
12	" "	..	14 to 17	....	5 00	" "

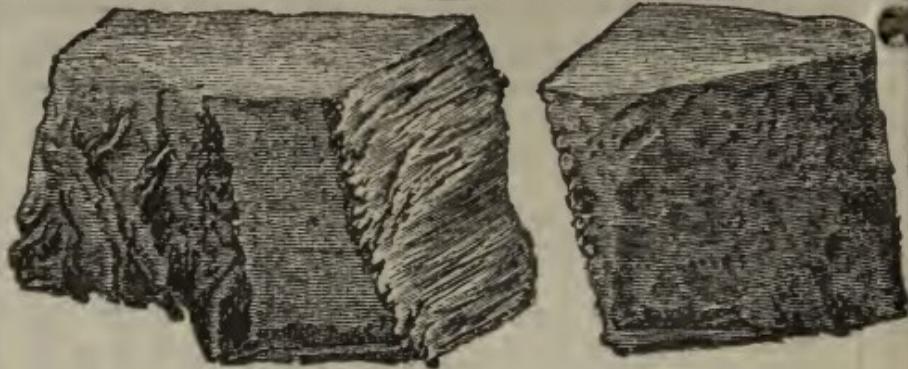
Any length same price per foot as above.

JOINED, SET, AND FILED READY FOR USE.

17 ft. Long,	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	2 50	2 50	2 50	2 50	2 50	2 80	3 15	3 50	3 90	4 20	5 35
17 ft. 6 in. Long	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	2 60	2 60	2 60	2 60	2 60	2 90	3 25	3 60	4 00	4 30	5 45
18 ft. Long, -	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	2 60	2 60	2 60	2 60	2 60	2 90	3 25	3 60	4 00	4 30	5 45
20 ft. Long, -	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	2 80	2 80	2 80	2 80	2 80	3 20	3 50	3 95	4 40	4 80	6 00
22 ft. Long, -	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	2 95	2 95	2 95	2 95	2 95	3 35	3 75	4 20	4 65	5 10	6 40
22 ft. 6 in. Long	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	3 10	3 10	3 10	3 10	3 10	3 50	3 90	4 35	4 85	5 30	6 70
25 ft. 6 in. Long	Width, .	$\frac{1}{8}$	3-16	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
	Price, .	3 50	3 50	3 50	3 50	3 50	4 00	4 45	4 95	5 55	6 00	7 60

We have a small pamphlet, which we call "THE BAND SAW," containing instructions for using; and PRICE-LISTS, complete and fully illustrated, giving a complete description of our NEW PATENTED PROCESS FOR TEMPERING, which produces the BEST, TOUGHEST AND MOST PERFECT BAND SAWS ever made, which we will mail to any address free

EMERSON, SMITH & CO. (Limited), Beaver Falls, Pa.



Cut a Bolt of Iron Clear off.

Office of L. LANGHAM,
NASHVILLE, Tenn., June 16, 1887.

Messrs. EMERSON, SMITH & CO.:

GENTLEMEN:—I inclose a piece (or rather two pieces), of iron that one of your No. 16 gauge, 7-inch Band Saws cut to-day, also some of the chips. The saw was damaged but very little, losing perhaps 1-16 of an inch from the points part of the way around the saw. These chips stuck to the points of the teeth, being slightly welded to them. Respectfully yours, J. D. ALLEN, Superintendent.

P. S.—Please hurry forward my last order for the four 8-inch No. 16 gauge blades.

To A. G. McCOY, Agent,

CINCINNATI, O., Sept. 26th, 1887.

Or, WHOM IT MAY CONCERN :

We wish to state that we have been using the Emerson, Smith & Co. Band Saw Blades for the past year exclusively, and partly the year previous. They have given better satisfaction than any other saws we have ever used, having tried the Paris French and several other kinds. Out of thirty saws we had from Emerson, Smith & Co. every one has proved good. [Signed], C. CRANE & CO.

NOTE.—Messrs. C. Crane & Co. have four large Band Saw Mills.

Emerson, Smith & Co., (L'td), Beaver Falls, Pa.

Three Band Saw Blanks 40½' x 5" x 17 Gauge.

NORTH MANCHESTER, Ind., October 14th, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—Inclosed find New York draft for your invoice of Aug 25th. We should have remitted you before this had we not wished to give your saws a good fair trial before writing to you.

We now have to say that we are entirely satisfied of the genuineness of their quality, in fact they are all that we could desire and even better than represented by you, and you can rest assured that you have made customers of us for the future as long as the saws hold out as good as these three. We shall however only buy the 17 gauge, as we have found they are fully as good as heavier for our work. Yours very respectfully, J. A. BROWNE,

Manager, Roann Lumber Co.

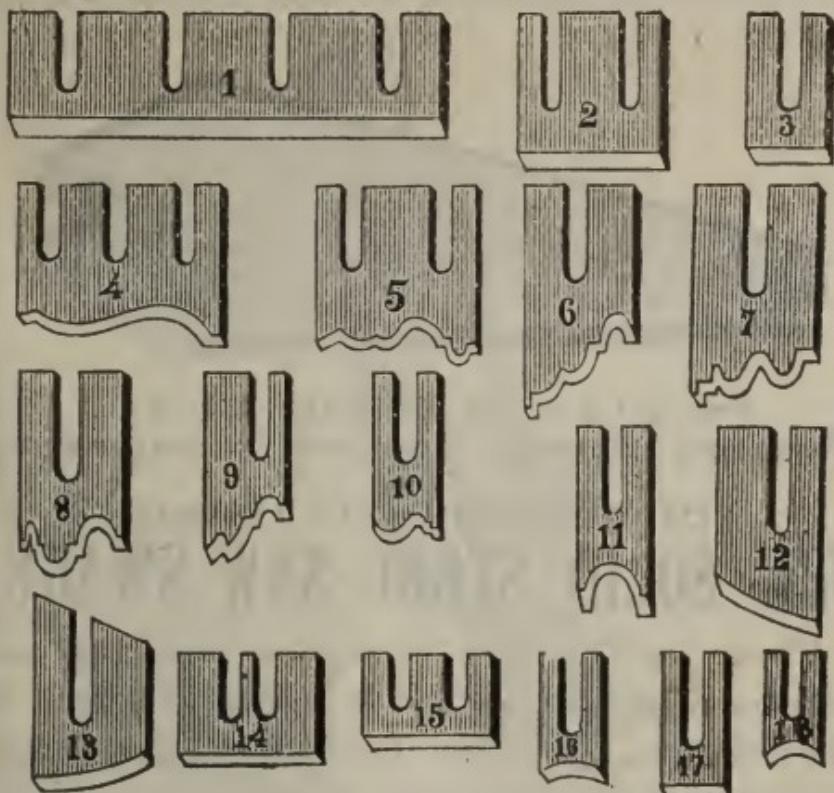
Caution in the Use of Emery Wheels on Band Saws.

If a GLAZED EMERY WHEEL is used it will harden the extreme edge of the Saw so that cracks will start in these hardened places before the Saw runs half an hour.

After grinding with an emery wheel, take a very fine file that will closely fit the shape that has been ground, lay the file flat on the parts ground and see whether it takes hold to cut the saw readily. If not, hack your emery wheel and go over the saw lightly, so as to take the glazing off. Or file it off. But never start a band saw that is glazed on the edge unless you want to break it.

The pitch of the teeth should be kept so that the Saw will take to the timber enough to keep it from bearing too hard against the back guide. If run until it is too dull it is sure to crowd too heavily against the back and glaze it or burr it and cause it to crack.

J. E. EMERSON,
For EMERSON, SMITH & CO. (Limited).

**DAMASCUS TEMPERED**

MOULDING MACHINE CUTTERS

AND
Knives of all kinds made of solid Cast Steel.

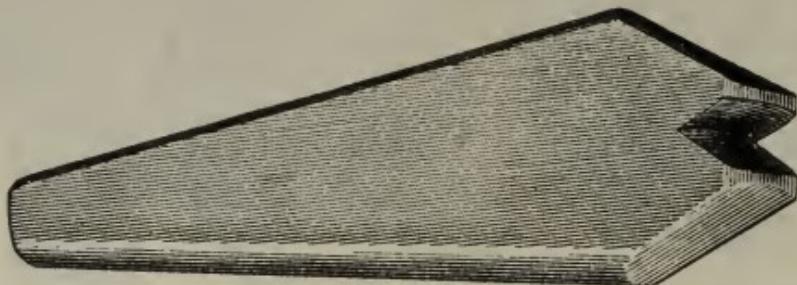
Moulding Machine Cutters, per inch in width.....	50 cents.
Plain Cutters, or Knives, per inch.....	30 "
Planing Machine Knives, steel faced with iron back, per inch.....	20 "

DIRECTIONS FOR ORDERING.

Either send a wood pattern the exact shape and thickness wanted, with holes or slots ; or a paper pattern with slots or holes marked on it, with exact thickness required. Name the number of Knives wanted, and mark the bevel side.

~~ESTIMATES~~ ESTIMATES made on large quantities of Cutters or Knives of any kind, with special prices to large consumers and the trade.

Warranted Superior Temper.



Price by mail, prepaid, \$1.50.
Postage Stamps received in payment.

DIRECTIONS FOR USING
OUR SOLID STEEL SAW SWAGE.

Use a light hammer of, say, not exceeding one pound weight. Do not try to spread the teeth if **VERY BLUNT**. But have them in regular shape, **MIDDLE SLIM**, and squared up well on the points, so that both corners will spread alike.

Use a very little oil on the points of the teeth before commencing to spread them. Stand behind the saw, hold the hammer end of the Swage back so as to keep the point up even with the tops of the teeth.

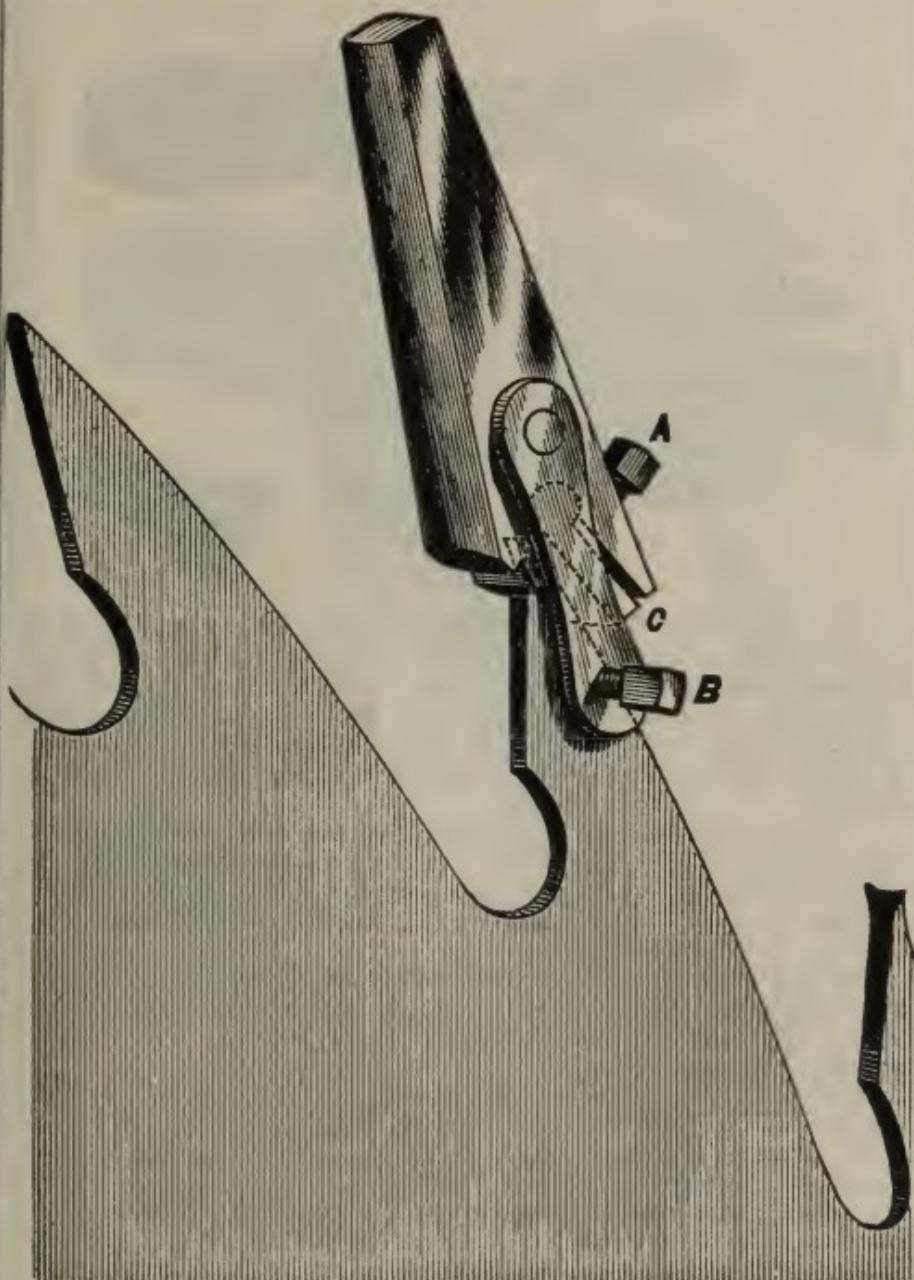
Be sure to hold the Swage in proper position, as by raising and lowering the hammer end while swaging, bends a small portion of the points of the teeth first up and then down, cracking them so that they easily crumble off when the saw is in use.

This Swage may be used on any kind of a solid or inserted toothed saw, and does not tend to shorten the teeth.

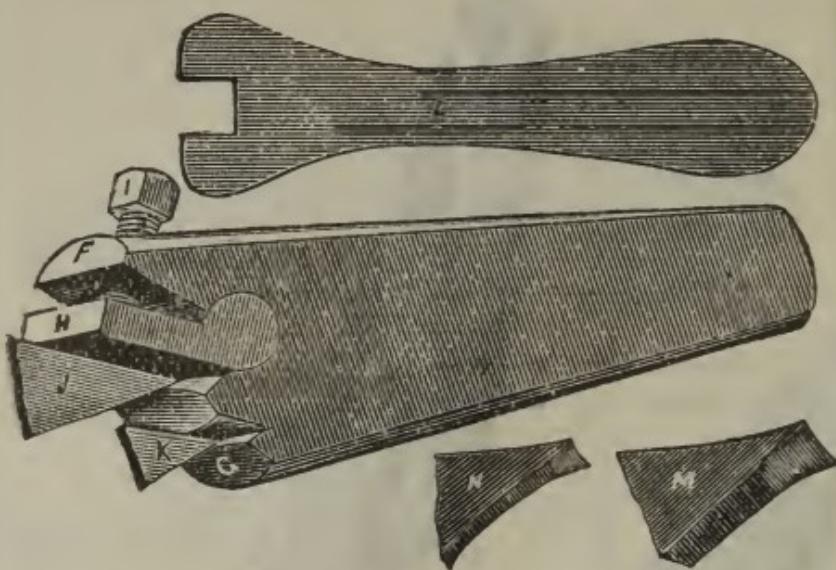
EMERSON, SMITH & CO. (LIMITED),

SAW MANUFACTURERS,

Beaver Falls, Pa.



RECENT IMPROVEMENT
IN OUR
PATENT UNIVERSAL and ADJUSTABLE
SAW SWAGE.
PRICE REDUCED TO \$4.00.
And prepaid by mail on receipt of price.



We now make them **HEAVIER**, a little longer and with a *safety guide* to prevent the hand of the operator being cut by the Swage slipping off the tooth. We have adopted for their manufacture the **STRONGEST, BEST STEEL MADE**, and **HARDEN** them under a **HYDRAULIC PRESSURE** so that there is no possibility of their yielding or jambing on the hardest saw.

By long experience in spreading the teeth of every kind of saw, we have found the most perfect shape for the die, in order to spread or pinch the point of the tooth wider without driving it back and shortening it, and thereby wasting the Saw.

We are in possession of *testimonials* from HUNDREDS of the best Sawyers all over the country who have used every other style, and say that no other is worth a gift when compared with ours.

We have not increased the price, so that it is within the reach of every person using either large or small Circular Mill, Mulay or Gang-Saws. Page 51 represents the Swage on a saw tooth and the late Attachment of the guard and set screw (B), which may be set so as to guide the center of the Swage to the center of the tooth. Full directions will accompany each Swage.

When the money accompanies the order, either by Postal Order, in a Registered Letter, by Draft or Express, we send it prepaid by mail, or if parties prefer, we will send it C.O.D., by Express, and give them an opportunity of examining before paying for it. By Express, however, it is very expensive, especially when they pass through two or three companies, and we recommend parties to remit, either by mail or registered letter, or by Postal Order, then they have our receipt for the money, and we deliver it, free of any further charge, to any part of the United States.

For *testimonials* see pages 115 and 116.



EMERSON'S Patent Guide Hammer Adjustable Swage.

The illustration on page 53 represents our new GUIDE HAMMER ADJUSTABLE SWAGE, patented Dec. 23d, 1884. This *Swage* works upon an entirely new principle and has been pronounced by practical sawyers who have used it to be the most perfect and effective tool for the purpose that has ever been devised.

The hammer is made of the best cast-steel, being guided and sliding freely on a $\frac{3}{8}$ finished steel rod, with a perfectly directed blow upon the head of the swage. The operator gives all of his attention to holding the swage in proper position, and no attention to the blow. With this swage about three times the number of blows can be struck than with a hand hammer, and they are more effective, less liable to split the teeth of saws than if heavier and less blows were struck.

We also make our GUIDE HAMMER SWAGE as a solid swage in two sizes, the smallest being specially adapted for use on the teeth of all fine toothed saws and for swaging the bits for our PLANER TOOTHED SAWS.

Price of the small size.....	$\$3.00$
Price of the largest size.....	4.00

Prepaid to any part of the United States on the receipt of price.

We have a large circular more fully illustrating the GUIDE HAMMER SWAGE which we will furnish on application.

WASHINGTON, Maine, Dec. 12, 1889.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please send me one of your Adjustable Upsets. My brother got one of you two years ago, and it beats anything around here. I had to go eight miles to get him to swage my saw, and he goes to all of the mills fixing saws, he has six different kinds of swages, and he says that for everything yours beats all of the others. Please send it by express to Washington, Maine, C. O. D.

EUGENE BLACKINTON.

SHAWS, Miss., April 9, 1888.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please send me immediately by express C. O. D. another of your Patent Universal Saw Swages, price four dollars. Our mill burned down on the 5th, burning my swage with it, and I would not be without one for twice the price. Respectfully, C. T. EDMONDS, Sawyer.

BLOOMSBURG, Pa., May 17, 1888.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I received the Adjustable Swage you sent me, and you just hit my style when you sent it. It is a little the best swage that I ever used and your solid steel swage is the next. Yours truly, CHENEY CALHOUN.

(SEE PAGES 115 AND 116.)

SOLID TOOTHED CIRCULAR SAWS.

(See pages 112 and 113.)

MILTON, Fla., Sept., 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

SIRS:—Your gentlemanly agent, Mr. Winchester, after some difficulty, got an order from Messrs. Chaffin & Co., of this place, for two circular saws. I find them to be of superior steel, spreading to full set, without showing any sign of flaws, breaking or crumbling, or without deteriorating the cutting quality of the steel, holding a good edge and doing nice work a long time. They were hammered to the best tension that I have seen from any factory for many years, and, all considered, I think that they are the best I ever saw, being superior in every respect.

(Signed) A. M. PATRICK, Saw Expert.

LYONS, Boulder Co., Col., Dec. 2, 1889.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The reason that I have not written to you regarding the 50-inch 8x10 gauge circular saw that I bought of you about one year ago, is that it did not need any writing about, it was capable of taking care of itself; but I will say it is the best saw that I ever used, I make no exceptions, it will stand our hard pine knots and neither crumble or bend, and if it don't run a true line, it is the fault of the sawyer. Yours,

GEORGE S. BILLINGS.

GRAYSON, Ky., March 9, 1889.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—To-day ship you our 56-inch Solid-toothed Saw. Wish it well hammered and ground down one gauge, making it 8x9 gauge. This saw has cut about six hundred thousand feet since it was purchased of you, and it has only worn down about one-half inch in size. The quality of the metal is superb, and all in all it is the best Solid-toothed Saw that we ever had. My sawyer claims that it cannot be beat in any way, and he has had some ten years' experience in Michigan mills. Yours very truly,

W. S. HAVENS, General Superintendent,
Pratt & Letchworth's Saw Mills.

MAYVIEW, Mo., May 27, 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

DEAR SIRS:—We have tried our new Saw, and can say that it cannot be beaten in the world. In fine work it runs lighter than our 42-inch saw did, and it is as fine a Saw as I ever saw work.

H. A. MILLER.

[Above was a 54-inch Solid Saw, with 36 teeth, 7x8 gauge.]

MUTUAL, Westmoreland Co., Penna., July 3, 1891.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I will just say that the 52-inch Solid Saw I purchased of you last Fall, is the finest, and the finest running piece of steel that I have ever seen. It has never failed to do its work, through hot and cold weather the same. Yours with respect,

SIMON P. STAUFFER.

56 EMERSON, SMITH & CO. (Limited),

54-inch Solid Saw 7x8 gauge, 44 teeth, right hand.

KOKOMO, Colorado, Dec. 16, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The saw I ordered from you for C. A. Wilder of Leadville was received all right some six weeks ago, and I can say that it is the best saw to stand up to the hard frozen timber I ever saw. I am running it on four-inch feed, and she has not made a crooked line yet, and the timber up here is I think the hardest to saw of any in the U. S. I have never seen a—saw up here yet but what the teeth were all broke out of them, but with your saw I am using the teeth as slim as when it came, and they stay right there.

Respectfully yours,

SAM. BROWN.

52-inch Solid Saw, 34 teeth 8x9 gauge.

SANDY LAKE, Pa., Sept. 27, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The 52-inch solid saw we bought of you two months ago is a "daisy." It cannot be downed, will turn it against any other make of saws in this country. We cut from five to six thousand feet per day with a 12 horse pony mill.

Yours truly,

MOOK, DEAN & CO.

54-inch Solid Saw, 36 teeth, 8x9 gauge.

WOODSTOCK, Wis., March 28, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

GENTLEMEN:—I write to you in regard to the saw that you shipped to me in February last, and will say that it is the best saw that I ever used. I have had no trouble with it, it swages nice, the temper is even all round, in fact it is a "Daisy." I would have written to you before, but wanted to test the saw.

I am yours truly,

CHARLES A. NEEFE.

None equal to our Shingle Saw.

TUSSEYVILLE, Penn., July 27, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have seen and used a great many saws, but have found none equal to Emerson's shingle saw. This saw gives entire satisfaction, and also the one that you repaired does fine. All orders in your line shall be sent to you.

Respectfully yours,

JACOB H. MEISS.

Six foot and 10-inch Mulay Saw.

CLARKSON, Ohio, May 4, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

DEAR SIRS:—I received the saw and will say that it is the best that I have ever used, runs with less power and does more work, with perfect satisfaction.

Yours truly,

J. S. ROSENSTEEL.

BOYKIN, Ala., Nov. 29, 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—The 56-inch, 30-toothed, 8x9 gauge, Solid-toothed Saw you sent me gives perfect satisfaction, and I am well pleased with it. Yours respectfully,

(Signed) G. B. FRIERSON, per Henry.

CANAAN, Me., Sept. 20, 1888.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—The Shingle Saw I had from you last Spring is the best one that I ever used. It will run the longest to a filing, and file the easiest and run with less power than any I ever had.

Respectfully, F. G. PENNEY.

NEW ORLEANS, La., Feb. 4, 1889.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—Enclosed find check for amount of bill for the two 44-inch Heading Saws. I wanted to try the saws and have given them two weeks' trial, and they proved to be all that is wanted. They certainly have genuine temper, one of them cut a 5-16th spike in two Friday without losing a single corner from any of its teeth. Something I never saw in my nineteen years' experience before. We stopped the saw, expecting to take it off, but found that it only needed pointing up, and went off as before.

Respectfully, T. J. SULLIVAN.

PLANER TOOTHED SAWS.

(See pages 92 to 104.)

ADDISON, Wis., Feb. 11, 1889.

Messrs. EMERSON, SMITH & CO. (Limited), Beaver Falls, Pa.

GENTLEMEN:—The 46-inch, 7x8 gauge Planer Toothed Saw that we bought of you last Fall gives entire satisfaction. We could not say anything when we only gave it a trial, but by using it now in frozen hard wood, we find that it does excellent work and requires less power than any other. You can safely put our name to the many testimonials that you already have, and we will recommend you whenever saws are wanted. We remain yours, very respectfully,

WILLIAM & HENRY KUHAUPT.

From a 56-inch 7-gauge Planer Saw, after using three years.

MILFORD, Conn., Feb. 18, 1889.

Messrs. EMERSON, SMITH & CO.

My saw has given the best of satisfaction. It is a pleasure to run it. Yours truly,

H. M. ROSE.

RURAL RETREAT, Va., Feb. 22, 1889.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—I like your Planer Toothed Saw splendidly. Have been running it eight years and have had it repaired only once.

Yours, JAMES H. LAMBERT.

CARBONDALE, Jackson Co., Ill., Feb. 23, 1890.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have been using one of your Planer Toothed Saws, gauge 7x8, 52 inches, since last June, and can say that it is the lightest running of any saw that I have ever used. I have been running a saw mill for the last twenty years, and have used a good many different styles of inserted toothed saws, and the Planer Toothed will do more work, with one-fourth less power than any I have ever used. Yours respectfully,

O. Z. RAWSON.

DALTON, Wayne Co., O., Feb. 17, 1890.

GENTLEMEN:—Send me five hundred Planer Saw Bits. That new Planer Toothed Saw that I bought from you last July is a "dandy." I cut this Winter 50,000 feet of hickory plank with one set of bits.

Yours, WILLIAM SHIFFERLY.

HARRISON, Ga., Feb. 6, 1889.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—I am using one of your 50-inch Planer Toothed Saws, and it is the best saw in this country, makes the smoothest lumber, and is easiest to keep in order. W. J. JOINER, JR.

52-inch Planer Toothed Saw.

MONMOUTH, Ill., March 19, 1889.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have been running this Saw about seven years, and myself and boy can cut from three to four thousand feet per day in hard oak logs. My boy is nineteen years old, and runs the engine and bears off and cuts the wood to fire with. I consider it the best Saw on earth. I never worked around a saw mill until I got this one, and have never had a bit of trouble. Yours,

D. T. SMITH.

48-inch Planer Toothed Saw, with 26 teeth, 6x7 gauge.

EAST SPRINGFIELD, Otsego Co., N. Y., March 15, 1888.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I must say a few words about the Planer Saw. I think it is the best general saw in use in the world. I have run solid circular saws, but think that your Planer Toothed Saw will run with one-third less power and do more cutting than the old solid toothed. I would not use another solid saw if given to me. It gives perfect satisfaction and surprises the neighbors when they come in to see it run. Yours truly,

G. B. RATHBUN.

56-inch Planer Toothing Saw, 30 teeth, 6x7 gauge

QUINCY, Miss., April 30, 1888.

Messrs. EMERSON, SMITH & CO., Limited.

GENTLEMEN:—The Inserted Toothing Saw that I ordered three months ago from you for H. C. Ferrell & Co., after being tried in every way, has proved to be perfectly satisfactory in every way. A few days ago I stopped to file after sawing a hard log, and found the loose collar 1-16 inch loose from the saw, yet it did not show any sign of heating or running crooked. In short, there is no better saw in the world. Yours, GEORGE MAGILTON, Millwright.

JUDSON, Fla., June 4, 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—Enclosed please find six dollars for Planer Bits for Saw No. 8,047. It is a 48-inch Planer Toothing Saw, bought of your agent at Jacksonville, Florida, Mr. Robinson, and can't be beat. These are the first bits ordered, and I have had the saw in use over twelve months. Respectfully, IRA J. CARTER.

P. S.—You repaired for me last year two Solid-toothed Saws. I don't think that I will use them any more.

CLIPPER AND LUMBERMAN'S CLIPPER SAWS.

(See pages 105 to 114.)

54-inch Lumberman's Clipper Saw, with 40 teeth,
made from 54-inch Solid Saw.

BRAMANS, Wayne Co., Pa., April 13, 1888.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—Enclosed find check for fifty dollars for repairs on saw. It works well. I had followed sawing about six years before purchasing this lumber tract, both in Wayne and Warren counties, and in that time had used a number of the different makes of saws, both solid and inserted toothed, but I have never found anything in the shape of a circular saw that will come up to your Lumberman's Clipper in all kinds of wood and weather, both for doing its work perfect and with ease. I used to have some trouble with the — inserted teeth, keeping the corners from breaking off, but never find any broke off with the Clipper.

Respectfully yours,

JOEL G. HILL.

THOMASTON, Ga., June 20, 1888.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Saw I have is a second-hand saw to me. The parties who first used it could not run it successfully. I hammered it and trued it, and it does better work than any saw I ever used, and I have been sawing thirty-two years. It is a 50-inch 8-gauge Lumberman's Clipper Saw, and you may send me a set of teeth for it. Yours truly,

J. W. HERRING.

52-inch 2½ Clipper Saw with 18 teeth, 7x8 gauge,
made from 51-inch Solid Saw.

HAVANA, Huron Co., O., May 8, 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—I will send another saw for you to fix this Fall. I can do more with 80 pounds of steam than I could with 100 pounds before the saw was fixed. I sawed one day last week 300 feet of lumber in eight minutes with a 12 H. P. engine. How is that for high! Yours truly,

CHARLES F. PRUDEN.

58-inch Lumberman's Clipper Saw, 6x8 gauge, made
from old Solid Saw.

LE BOEUF, Erie Co., Pa., Feb. 28, 1888.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

DEAR SIRS:—The Saw you shipped us on the 15th was received the 25th, and our sawyer says she is a "daisy." We have been sawing 42-foot oak, pine and frozen hemlock, and it runs as straight as a die. We are well pleased with the Saw. Yours truly,

THE C. M. WHEELER FARM & LUMBER CO.

57-inch Lumberman's Clipper Saw, 56 teeth, 8x9
gauge, made from 56-inch Solid Toothed Saw.

FULTON, Ark., Aug. 15, 1888.

Messrs' EMERSON, SMITH & CO., Limited, Beaver Falls, Pa.

GENTLEMEN:—The saw that you inserted the Lumberman's Clipper Teeth in for me I am well pleased with, and would recommend it any one. Yours truly,

B. D. WILSON.

HARDYS, N. Y., Aug. 12, 1889.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

DEAR SIRS:—Send us eighteen teeth for our 40-inch 10x11 gauge 18-toothed Lumberman's Clipper Saw No. 8,150. Our power is light, so we use only nine teeth for a set and have cut over 100,000 feet with one set. Yours, etc.,

C. CROSS & CO.

BROCKPORT, Pa., July 22, 1889.

Messrs. EMERSON, SMITH & CO., Limited, Beaver Falls, Pa.

GENTLEMEN:—I enclose my check for the amount due you for two 66-inch Lumberman's Clipper Saws. Yours truly,

W. H. HORTON.

P. S.—Saws have given perfect satisfaction.

MARIONVILLE, Forest Co., Pa., Feb. 11, 1890.

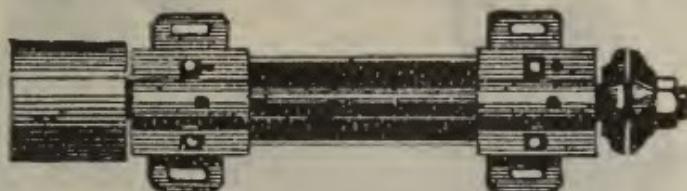
Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Enclosed find check to balance account for the 64-inch Lumberman's Clipper Saw 7x9 gauge. I am very well pleased with the saw and am running on 4-inch feed in frozen timber, and she stands right up to the mark in every cut.

Yours truly,

H. H. HENSIL

SAW MANDRELS.



Self-Oiling Boxes on Cast-Iron Bed.

SAW MANDRELS

No.

1	Bed 12 in. long,	$\frac{1}{8}$ in. cast steel shaft,	$\frac{3}{8}$ in. where saw goes on	\$10 00
2	" 14 "	1 "	" $\frac{3}{8}$ "	12 00
3	" 16 "	$1\frac{1}{8}$ "	" 1 "	14 00
4	" 18 "	$1\frac{1}{8}$ "	" $1\frac{1}{8}$ "	16 00
5	" 20 "	$1\frac{1}{8}$ "	" $1\frac{1}{8}$ "	18 00
6	" 22 "	$1\frac{1}{8}$ "	" $1\frac{1}{8}$ "	20 00
7	" 24 "	$1\frac{1}{2}$ "	" $1\frac{1}{4}$ "	22 00

All of the above with any size pulley desired on end of shaft.

Mandrels of any length made to order with the self-oiling boxes, and double mandrels with saw on both ends and pulley in center.

Also Mandrels and Washers for Gangs of Saws for Lath or Dovetailing.

REGULAR SIZED

Mandrel and Pin Holes in Saws.

All Saws up to 10 inches in diameter, $\frac{3}{8}$ inch Mandrel Hole.

All Saws from 12 to 16 inches in diameter, 1 inch Mandrel Hole.

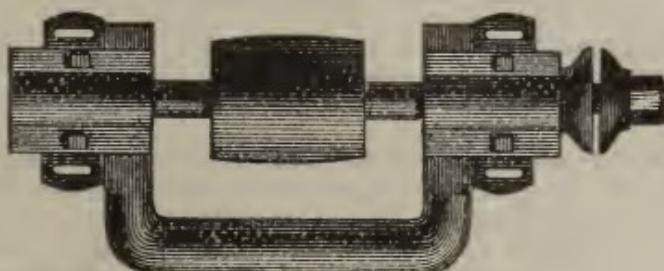
All Saws from 18 to 24 inches in diameter, $1\frac{1}{4}$ inch Mandrel Hole.

All Saws from 26 to 34 inches in diameter, $1\frac{1}{2}$ inch Mandrel Hole.

All Saws from 36 to 40 inches in diameter, $1\frac{1}{2}$ inch Mandrel Hole.

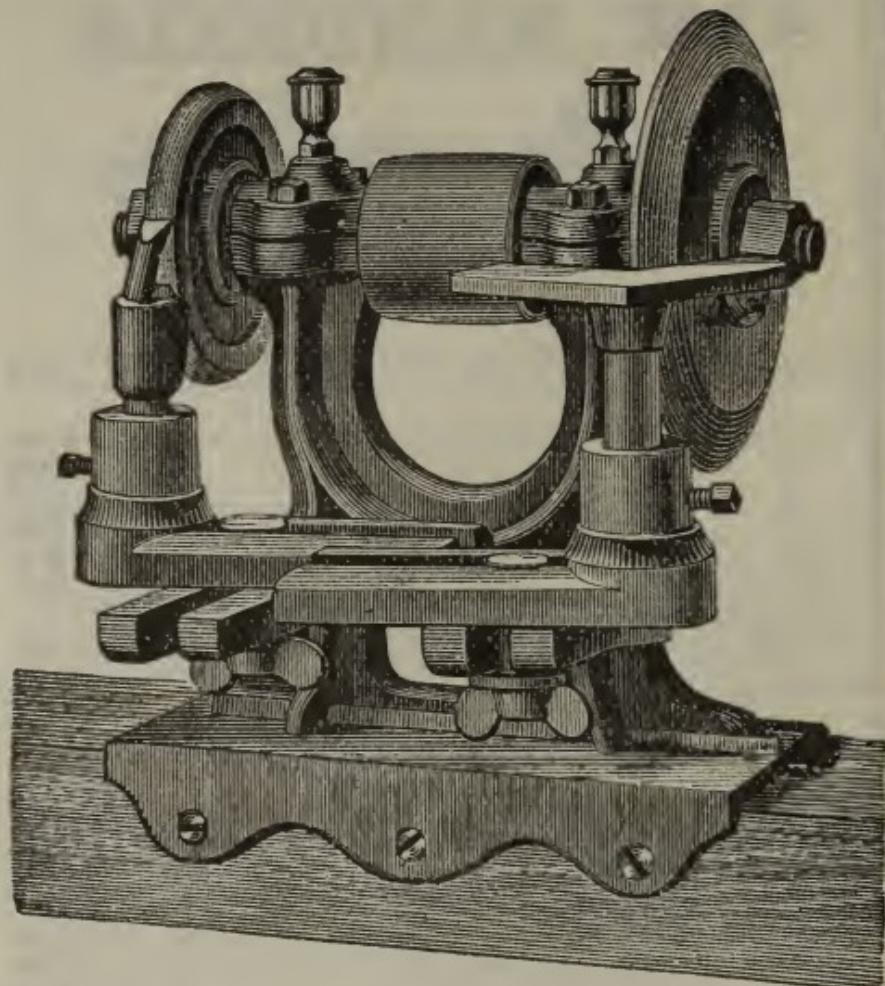
The Circular Saw, for sawing logs, has a two-inch Mandrel Hole, and two $\frac{3}{8}$ inch Pin Holes, three inches apart from center to center.

~~or~~ Mandrel or Pin Holes of any size made to order.



Bed 21 inches long, $1\frac{1}{8}$ steel shaft, $1\frac{1}{4}$ where Saw goes on, \$22 00
 " 21 " $1\frac{1}{4}$ " $1\frac{1}{8}$ " " " 18 00

Any size pulley in center. All lengths and sizes of Saw Mandrels made to order, with self-oiling pillow block or boxes.



Patent Planer Saw Bit Grinder, Saw Gummer and Tool Sharpener.

Price of Machine with one wheel.....	\$12 00
" " " two wheels.....	14 00
Countershaft and hangers.....	6 00

This machine weighs about 40 pounds, and may be run with a two inch belt from 2,000 to 4,000 revolutions per minute. In a saw mill, for grinding the Bits of our Planer Saws, it may be attached to a bench or a block of wood, and run from any pulley on the saw mandrel or any other piece of machinery.

The Saw Bit is held between the thumb and forefinger, and ground always on the under side.

We put a bevel wheel on the \$14.00 machine, 7 inches in diameter, for gumming saws, or it may be used for grinding Moulding Bits or other tools. In short, it is one of the most useful machine about a mill or shop.

**The No. 2
SAW GUMMER
AND
TOOL SHARPENER**

Weight of No. 2 machine about 75 pounds, and will take two Emery Wheels up to 14 inches in diameter.

Besides being a Saw Gummer it is used for all kinds of tools and moulding bits.

Price, complete, without wheels, . . .	\$18.00
Counter shaft and hangers for the same,	7.00
For price of wheels see page 67.	

Emerson's Patent Adjustable Swage.

LEWISTOWN, Ohio, June 27, 1887.

Messrs. EMERSON, SMITH & CO.:

SIRS:—The Adjustable Swage that you sent me is all right. It is all that you claim for it. I have been sawing for nine years and it beats any swage that I have ever used. I have used several different makes.

Yours truly,

HENRY CLAY.

SCARY, West Va., Dec. 14, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

GENTLEMEN:—A few weeks ago, we sent to you for one of your Adjustable Swages, which we received in due time, and say it is just what you claim for it. I can swage my saw in less time, do it better than with any swage I ever saw. Would not take its weight in gold for it, and do without it.

Respectfully,

JOHN E. WRIGHT.

MARYSVILLE, New Brunswick, Aug. 29, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

SIRS:—I have been using two of your Guide Hammer Swages, viz.: the Patent Adjustable Swage, No. 1, and the Swage No. 2, along with the Clamping Gauge, and they are the best that I have ever seen. I would not be without them on any account. Yours,

WILLIAM ALEXANDER.

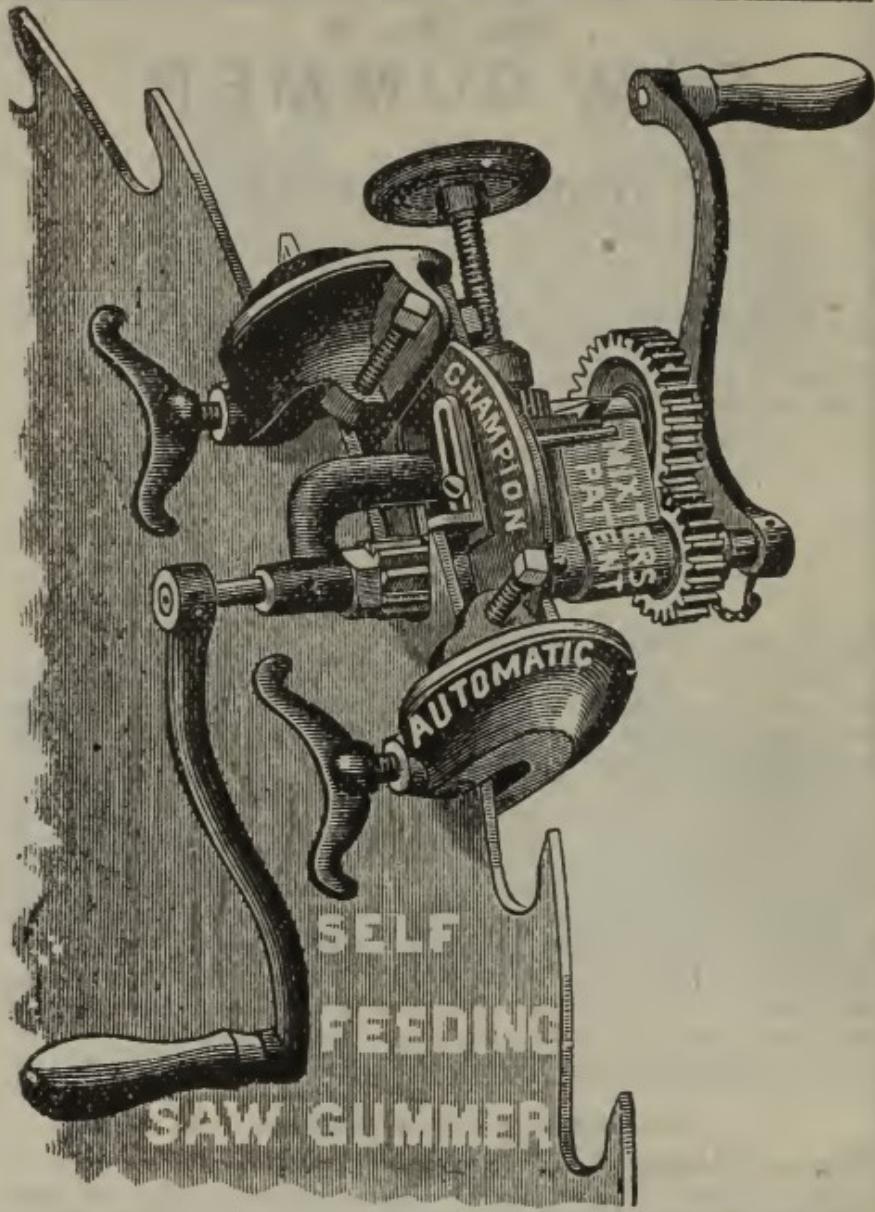
FAIR HILL, Ark., May 3, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I received the Adjustable Swage, and it is the swage first of any. There were two machine men in my office when it arrived, and they are selling such articles but they admitted it was the best that they ever saw. Every saw mill man should use this swage, I can give it just praise.

Yours respectfully,

M. P. WOOLBRIGHT.



CHAMPION SAW GUMMER.

Automatic Feed.

*Double Crank and Improved
Adjustable Carriage-way.*

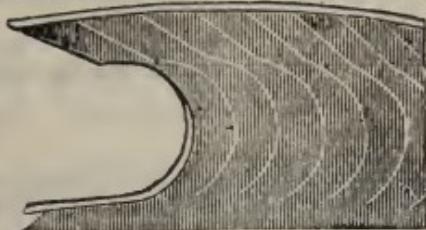
EXPRESSLY FOR

Large Circular Saws.

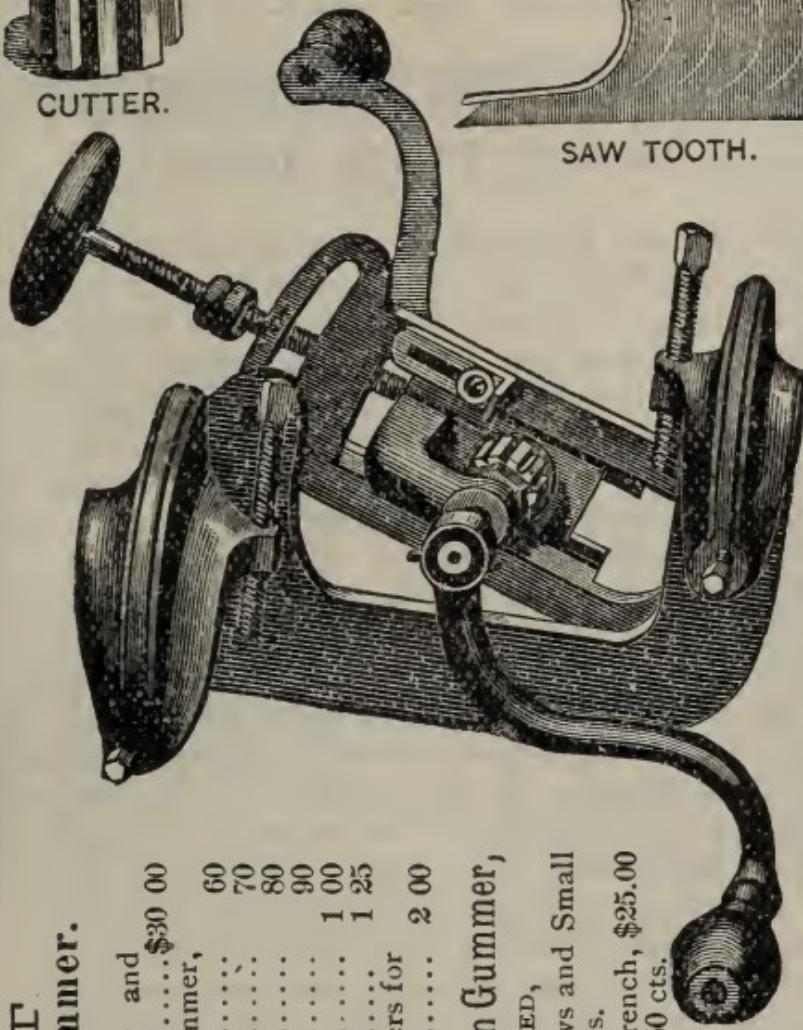
This cut represents the Champion Gummer in position for cutting back under the teeth on the same circle as the backs, with the Adjustable Carriage-Way down. A large throat or gullet (in proportion to the length of teeth) can be formed by using a larger cutter. The larger the cutter the less filing there is to do and the better the saw will clear. This is one of the advantages this Gummer has over others that use small cutters only. After the machine is adjusted for one tooth, then it will make them ALL ALIKE ALL AROUND THE SAW. An extra arbor will be furnished when smaller cutters than $\frac{3}{8}$ inch are required.



CUTTER.



SAW TOOTH.



PRICE LIST Patent Champion Gummer.

AUTOMATIC FEED.

Including three Cutters, Grinder and Wrench.....	\$30 00
$\frac{3}{4}$ in. Cutters for Champion Gummer, including postage.....	60
$\frac{7}{8}$ in. Cutters, including postage.....	70
" " "	80
$1\frac{1}{8}$ " " "	90
$1\frac{1}{4}$ " " "	1 00
$1\frac{1}{2}$ " " "	1 25
Extra Arbors for $\frac{1}{2}$ and $\frac{5}{8}$ in. Cutters for Champion Gummer.....	2 00

No. 2 (Small Size) Patent Champion Gummer,

WITH AUTOMATIC SELF-FEED,

especially adapted for Cross-Cut Saws and Small and Medium Circular Saws.

Price, with 3 Cutters, Grinder and Wrench, \$25.00 $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ inch Cutters, each, 50 cts.

It can be quickly adjusted to cut in any angle or line from horizontal to perpendicular. It cuts very rapidly, and there is no risk of bending, breaking, or case-hardening the Saw. In short, it is the

Boss Gummer of the World!

CAUTION!

Using Emery Wheels in Gumming Saws, OR HOW TO USE THEM.

There exists in the minds of many persons who are not fully acquainted with the principle upon which Circular Saws are made, an erroneous opinion that a Saw should work the same until worn out, if it is not accidentally sprung in use or strained in gumming. So far as any damage to the Saw is concerned, there is no difference between the use of a burr gummer and a file ; but if proper care is not exercised in the use of the emery wheel, there is more danger from their use than either the file or burr.

If the condition of the Saw is such, that a considerable depth is required to be cut into the plate, the operation should be performed by going over the Saw several times, only allowing the wheel to grind away so much as can be done without heating the saw to a blue. There is no excuse whatever for crowding the emery wheel so as to heat the Saw red hot, as this is sure to injure the saw, often glazing it, where the wheel comes in contact, so hard that a file will make no impression whatever. From these hard spots on the outer surface, small cracks commence, invisible at first to the eye, but gradually enlarging until they become dangerous fractures. Hacking the face of the wheel with a cold chisel, or the corners of an old file, will often prevent its glazing, so that is not as liable to heat the saw. After a few times gumming, however, the saw will enlarge on the rim, so that the slightest warmth will cause it to buckle, and there is no remedy left but to send it to a saw-maker, and have it re-hammered. Some, however, entertain the erroneous impression that a saw re-hammered will never run as well as when new. On the contrary, a saw re-hammered will generally run better than when new, because all the elasticity (or nearly all) is worked out of the saw by using, and it generally works stiffer than when new.

 Emery Wheels, next page.

**PRICE LIST
OF
SOLID EMERY WHEELS.**

Diameter of Wheels in inches.	THICKNESS IN INCHES.					Revolutions per Minute.
	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	
1 $\frac{1}{2}$	\$ 40	\$ 45	\$ 50	\$ 55	\$ 60	10,000
2	50	55	60	65	70	10,000
2 $\frac{1}{2}$	65	75	85	95	1 05	8,000
3	80	95	1 10	1 25	1 40	6,000
3 $\frac{1}{2}$	95	1 15	1 35	1 55	1 75	5,000
4	1 10	1 35	1 60	1 85	2 10	4,500
4 $\frac{1}{2}$	1 25	1 55	1 85	2 15	2 40	4,000
5	1 40	1 80	2 20	2 60	3 00	3,700
6	1 75	2 40	3 05	3 70	4 35	3,200
7	2 15	3 00	3 85	4 70	5 55	2,700
8	2 60	3 60	4 60	5 60	6 60	2,400
9	3 10	4 35	5 60	6 75	7 50	2,100
10 $\frac{1}{2}$	3 60	5 15	6 70	8 25	9 75	1,800
12	4 25	5 75	7 35	9 00	10 70	1,600
14	6 25	8 45	10 65	12 90	15 10	1,350
16	8 00	10 85	13 70	16 50	19 40	1,200
18	9 50	13 25	17 00	20 75	24 50	1,050
20		16 00	20 50	25 00	29 00	950
24			29 00	36 00	43 00	850
30				50 00	61 00	700
36					95 00	550

SPEED OF WHEELS.

The following table gives the number of revolutions per minute at which Emery Wheels of different sizes should be used, to render them both safe and durable:

Diam. of Wheel.	Revolutions per minute.	Diam. of Wheel.	Revolutions per minute.
2 inches	10,000	9 inches	2,100
2 $\frac{1}{2}$ "	8,000	10 $\frac{1}{2}$ "	1,800
3 "	6,000	12 "	1,600
3 $\frac{1}{2}$ "	5,000	14 "	1,350
4 "	4,500	16 "	1,200
5 "	3,700	18 "	1,050
6 "	3,200	20 "	950
7 "	2,700	24 "	800
8 "	2,400		

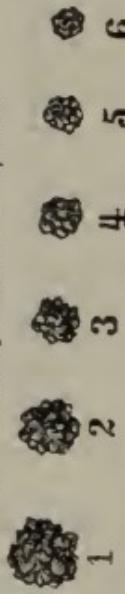
Brazilian Diamond Tools, \$6.00 to \$18.00.

Emerson's Patent method of holding and Securing the Diamond. See page 68.

40 PER CENT. DISCOUNT FROM ABOVE LIST.



Patented September 21st, 1875.



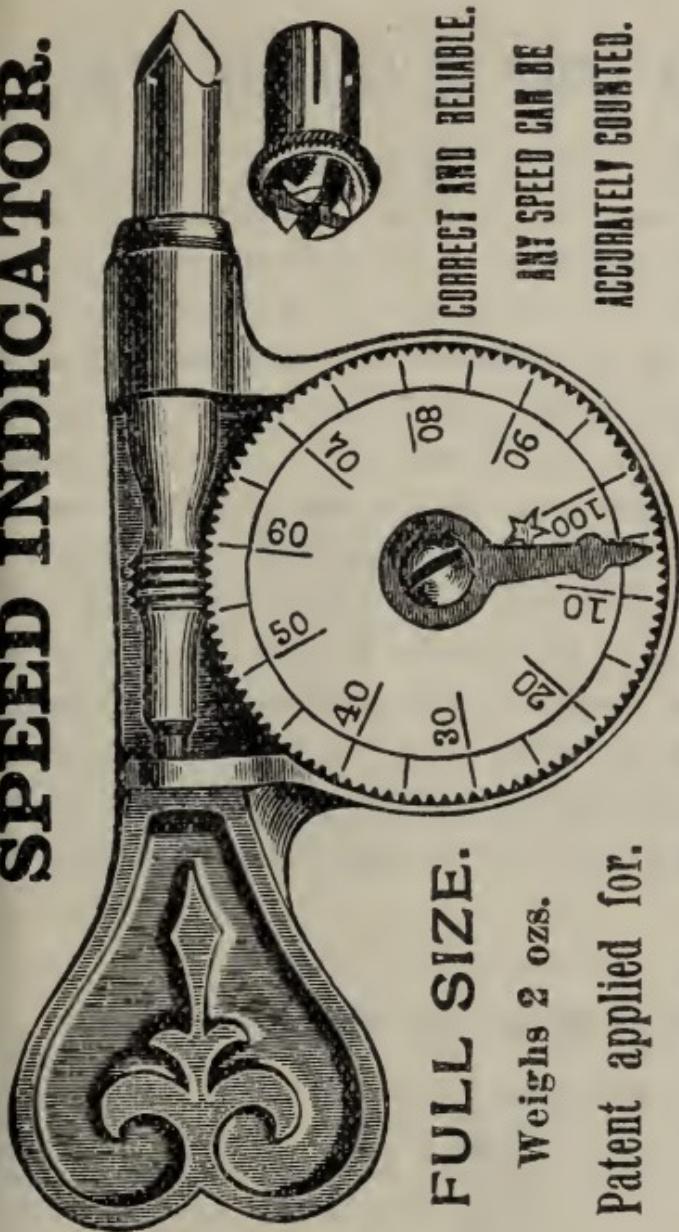
PRICE LIST OF PATENT DIAMOND TOOLS.

Above we illustrate the sizes of diamonds used in each number of turning tools.

No. 1, one Carat Diamond.....	Price, \$18 00	No. 4, $\frac{1}{2}$ Carat Diamond.....	Price, \$9 00
" 2, $\frac{3}{4}$ "	" 15 00	" 5, $\frac{1}{2}$ "	" 7 00
" 3, $\frac{1}{2}$ "	" " "	" 6, $\frac{1}{2}$ "	" 6 00
" " "	" 12 00	" " "	" " "
" " "	" " "	" " "	" " "

It is truly marvelous to contemplate the amount of work that a diamond one-half the size of a grain of wheat will perform in turning Emery Wheels, Dressing Burr Mill Stones, &c. Our process is the only safe way of holding perfectly secure small diamonds, consequently we are able to supply parties using only one or two wheels with a diamond to suit their business, and at a price to bring them within the reach of all. We use the best Brazilian Diamonds, but cannot warrant them.

SPEED INDICATOR.



Sent by Mail, Prepaid, for \$1.00,

WITH FULL INSTRUCTIONS FOR USING.

EVERY MECHANIC SHOULD HAVE ONE.

This instrument is very useful for accurately giving the speed of any machine or shaft when in motion. It is very important that the exact speed of saws be given, and with the SPEED INDICATOR there can be no mistake.

Every mechanic should have one.

For proper speed of Circular Saws see p. 70.

PROPER SPEED OF CIRCULAR SAWS.

NINE THOUSAND FEET PER MINUTE, that is nearly two miles per minute, for the rim of a circular saw to travel, may be laid down as a rule. For example: a saw 12 inches in diameter, 3 feet around the rim, 3,000 revolutions ; 24 inches in diameter, or 6 feet around the rim, 1,500 revolutions ; 3 feet in diameter, or 9 feet around the rim, 1,000 revolutions ; 4 feet in diameter, or 12 feet around the rim, 750 revolutions ; 5 feet in diameter, or 15 feet around the rim, 600 revolutions. Of course, it is understood that the rim of the saw will run a little faster than this reckoning, on the account of the circumference being more than three times as large as the diameter. The speed of Shingle and other Taper ground Saws, attached to Stiffeners or Collars, should be from one-third to one-fourth higher than for a regular log saw of same size as given in "Table of Speeds" following.

Table of Speed for Circular Saws.

Size of Saw.	Revs. per min.	Size of Saw.	Revs. per min.
8 in.....	4,500	42 in	870
10 in	3,600	44 in	840
12 in.....	3,000	46 in	800
14 in.....	2,585	48 in	750
16 in.....	2,222	50 in.....	720
18 in.....	2,000	52 in.....	700
20 in.....	1,800	54 in	670
22 in.....	1,636	56 in	650
24 in	1,500	58 in	620
26 in.....	1,384	60 in	600
28 in.....	1,285	62 in	570
30 in.....	1,200	64 in	550
32 in.....	1,125	66 in	540
34 in.....	1,058	68 in	520
36 in.....	1,000	70 in	510
38 in.....	950	72 in	500
40 in.....	900		

RULES FOR CALCULATING THE SPEED —OF— SAWS, PULLEYS OR DRUMS.

PROBLEM 1. The diameter of the driver and driven being given, to find the number of revolutions of the driven.

RULE: Multiply the diameter of the driver by the number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions of the driven.

PROBLEM 2. The diameter and revolutions of the driver being given, to find the diameter of the driven, that shall make any given number of revolutions in the same time.

RULE: Multiply the diameter of the driver by its number of revolutions, and divide the product by the revolutions of the driven; the quotient will be its diameter.

PROBLEM 3. To ascertain the size of the driver.

RULE: Multiply the diameter of the driven by the number of revolutions you wish it to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

CASTING-BOXES.

Wet a piece of THIN WRITING-PAPER with oil, and wrap it around the journal of the mandrel (the oil will cause the paper to stick to the journals), let the joint in the paper come on the side of the journal between the boxes; heat the boxes before pouring off; lay the mandrel in place, and let it remain until the journal and box are both warm, but not so as to burn or scorch the paper. The mandrel should then be taken out, and the oiled paper stuck around it. Pour the metal around the outside of the paper after the lower boxes are poured; pack between the two with layers of paper, and put on the upper box, bolting it down. After the upper box is poured, take it off and take off the paper, which will leave the journal of the mandrel free to run without heating. As the journals wear down so as to become too loose, take out a layer of paper from between them. Use metal made from pure block tin and copper.

DAMASCUS FILES.

We have five sizes of second cut (or fine) Mill Files, made specially for us, and tempered expressly for high tempered saws, and stamped with our own name and bearing our own label, viz., : 6, 8, 10, 12 and 14 inches.

In dozen lots of each kind to customers we make 50 per cent. off the list and warrant every File.

These Files are all made of EXTRA QUALITY OF STEEL, and are made for use, and will really do about double the amount of work of ordinary files sold in this country. Send us a sample order for a few dozens, and afterwards you will purchase none others.

THE USE OF FILES.

A new file should always be used with a light pressure until the very thin sharp edges of the teeth are worn off, after which a heavier pressure may be used with much less danger of the teeth crumbling at the top or breaking off at the base.

Every filer should keep a partially worn file to use first on the chilled or gritty skin of castings, or on a weld where borax or similar fluxes have been employed, or on the glazed surface of saws after gumming.

In filing high-tempered steel, it will generally be found more profitable to use the finer grades of files, called second cut, and particularly where anything like a fine finish is required. A steady stroke, with strong pressure, is best for thick gauge saws.



Damascus Files.

MILL AND ROUND.			Pit Saw Blunt Single Cut.	Band Saw Ta- per Sin- gle Cut.	Taper Single Cut.	Slim Taper.
Inch.	Bastard.	2d Cut.				
4	\$1 80	\$2 15	\$2 20	\$1 75	\$1 20	\$1 30
5	2 00	2 40	2 50	2 40	1 70	1 70
6	2 25	2 65	3 20	3 25	2 40	2 10
7	2 55	3 00	3 70	4 90	3 00	2 50
8	2 90	3 40	4 30	4 95	3 80	3 00
9	3 30	3 85	5 00	5 90	4 60	3 70
10	3 80	4 40	5 80	7 10	5 70	4 50
11	4 50	5 20	6 70			
12	5 40	6 20	7 70			
13	6 50	7 45				
14	7 80	8 90				

One round edge advance $7\frac{1}{2}$ per cent., and two round edges 15 per cent. on respective kinds and cuts.

All lengths above those listed, and files varying from standard sizes and kinds, are subject to special prices.

50 Per Cent. Off for Orders in Dozen Lots.

60 " " " " 5 " "

Special Prices quoted on larger quantities.

PRICE LIST

OF

BEST OAK-TANNED STANDARD

Leather Belting.

WIDTH. Inches.	PRICE. Per Foot.	WIDTH. Inches.	PRICE. Per Foot.
1	\$0 10	12	\$1 55
1 $\frac{1}{4}$	13	13	1 68
1 $\frac{1}{2}$	17	14	1 82
1 $\frac{3}{4}$	20	15	1 98
2	23	16	2 14
2 $\frac{1}{4}$	26	17	2 31
2 $\frac{1}{2}$	30	18	2 49
2 $\frac{3}{4}$	33	19	2 66
3	36	20	2 84
3 $\frac{1}{4}$	40	21	3 02
3 $\frac{1}{2}$	43	22	3 20
3 $\frac{3}{4}$	46	23	3 37
4	50	24	3 54
4 $\frac{1}{2}$	56	26	3 92
5	63	28	4 30
5 $\frac{1}{2}$	70	30	4 64
6	76	32	5 00
7	90	34	5 35
8	1 02	36	5 70
9	1 15	40	6 40
10	1 29	44	7 10
11	1 42	48	7 80

Cut Lacings in 100 ft. Packages.

$\frac{3}{4}$ in. wide,	.	.	.	.	\$1 00
$\frac{3}{8}$ in. "	.	.	.	.	1 50
$\frac{1}{2}$ in. "	.	.	.	.	2 00
$\frac{5}{8}$ in. "	.	.	.	.	2 75
$\frac{3}{4}$ in. "	.	.	.	.	3 25

Double Belts are twice the price of single.

PRICE LIST

OF BEST QUALITY OF

RUBBER BELTING

Made from Best Cotton Duck.

WIDTH.	2 PLY.	3 PLY.	4 PLY.	5 PLY.	6 PLY.
1 inch.....	\$.07	\$.11	\$.15	\$	\$
1 1/4 "	.09	.13	.17	....	...
1 1/2 "	.11	.15	.19	....	...
2 "	.15	.17	.21	....	...
2 1/2 "	.18	.22	.26	....	...
3 "	.22	.26	.31	....	...
3 1/2 "	.26	.30	.37	....	...
4 "	.30	.34	.42	....	...
4 1/2 "	.33	.39	.47	....	...
5 "	.36	.43	.52	....	...
6 "	.43	.52	.62	....	...
7 "	.51	.60	.73	....	...
8 "	.59	.70	.84	1.05	1.26
9 "	.67	.80	.95	1.18	1.42
10 "	.75	.90	1.07	1.33	1.60
11 "	.83	1.00	1.18	1.47	1.77
12 "	.91	1.08	1.30	1.62	1.95
13 "	1.00	1.18	1.42	1.77	2.13
14 "	1.08	1.28	1.54	1.92	2.31
15 "	1.16	1.38	1.66	2.07	2.49
16 "	1.25	1.50	1.78	2.22	2.67
18 "	1.41	1.70	2.02	2.52	3.03
20 "	1.58	1.90	2.26	2.82	3.39
22 "	1.76	2.12	2.52	3.15	3.78
24 "	1.96	2.36	2.80	3.50	4.20
26 "	2.15	2.60	3.08	3.85	4.62
28 "	2.35	2.84	3.36	4.20	5.04
30 "	2.55	3.10	3.64	4.55	5.46

Intermediate widths at proportionate prices. Quality should determine value. Shoddy dear at any price.
Endless Belts special price.

N. B. — Many rubber belts are made out of the poorest kind of shoddy, all sorts of refuse being used in their manufacture. These belts are dear if they are given to you. The class of belting that we sell is *warranted*, and in all of the years that we have been furnishing our customers, we have never had even the shadow of a complaint as to quality.

NATURAL GAS.

The fame of the natural gas wells of Western Pennsylvania has gone abroad over the whole world, and it is almost impossible for one who has never seen them or their product applied to practical uses, to realize the whole truth. To illustrate, our young city of Beaver Falls has a population of twelve thousand, with many large factories, one of which employs eight hundred workmen in the manufacture of steel, and Natural Gas is the ONLY fuel used in all of these factories, and it is also used in nearly all of the residences in the city. The best scientific theory as to its origin is that it is the product of hydro-carbon, oils and water, acted on by internal heat away down in the recesses of the earth, escaping from the point of production, nearer the surface to the gas-bearing sand rock, in which it is found in inexhaustible quantity.

Its heating qualities have been known for over fifty years, and for the past twenty-five years it has been used to a limited extent in the oil regions of Pennsylvania for the purposes of fuel for the "drilling rigs," and also in some private houses. It is only in the past eight or ten years that it has been generally utilized for manufacturing purposes, until now to illustrate, ninety per cent. of all the factories in our neighboring city of Pittsburgh, use it exclusively as a fuel.

IT HAS PROVED TO BE THE PUREST HEAT EVER DISCOVERED for working steel. Steel heated with it does not scale like when coal or even wood is used, and a toughness and strength is imparted never before known. IT SEEEMS TO HAVE COME TO STAY, and its development is still in its infancy. Beaver County, in which we are located, has thus far the largest wells, with the most powerful flow of any in the State, with a great deal of good territory not yet fully developed. We visited a new well a short time since, which had only been opened a few days, and the roar, as we approached it, over the surrounding hills was deafening, and could be heard for miles. An attempt was made to stop its flow by sinking a blacksmith's anvil in the ground about eighteen inches, over the mouth of the well and wedging it in. In a few moments the accumulated pressure blew the anvil thirty-five feet high over a shed, and several rods distant into a field. This well has since shown a pressure of six hundred pounds to the square inch, which would explode an ordinary steam boiler, and this is only one of several scores of such wells scattered over Beaver County. The wells in this vicinity are of varying depths, from 1,100 to 1,600 feet, and of late so perfectly are they cased, that the flow of gas can be regulated or held back altogether, the same as steam from a boiler or water from a source of supply. We use this FUEL OF NATURE in all departments of our factory, but the greatest advantage to our customers is its use in our tempering furnaces. PARTIES NOW USING OUR SAWS WILL FIND THEM LESS LIABLE TO SPLIT, CRUMBLE OR BREAK than ever before, and if any of our customers could make it convenient to visit our works, we would have them remember that "the latch-string is always out," and it will afford us great pleasure to show its working and also give every possible explanation.

Capacity of Circular Saw Mills.

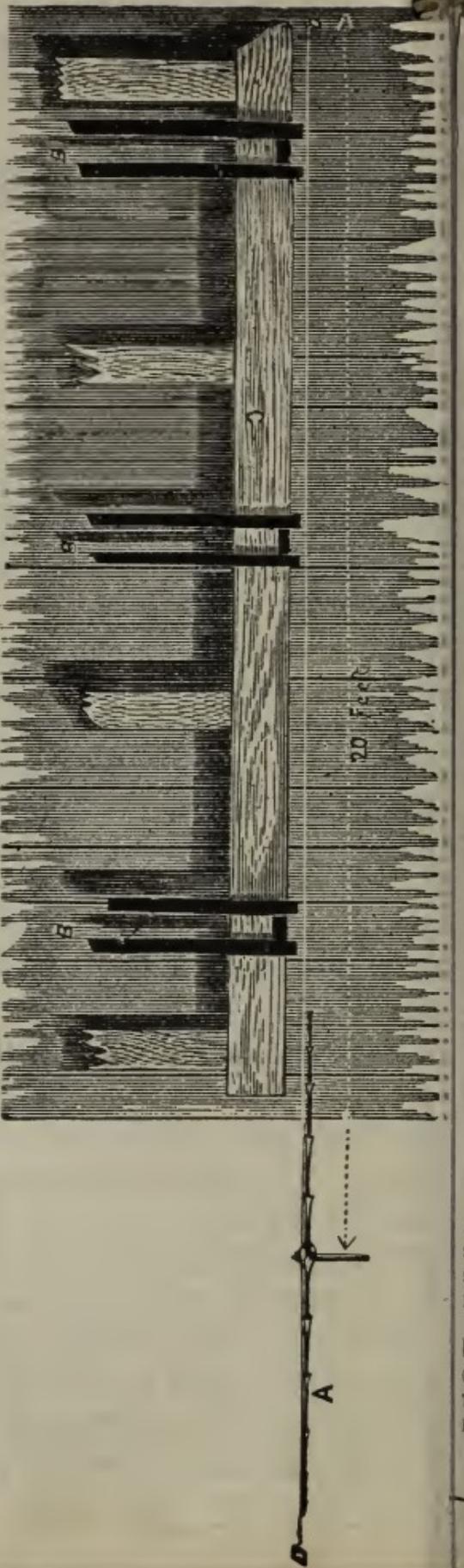
TO THE HORSE POWER.—“How much lumber to each horse-power will a circular saw mill cut?” is often asked. A horse-power is that which will raise 33,000 lbs. one foot high per minute; 12 superficial feet of heating surface on a boiler, is supposed, under ordinary circumstances, to generate steam for one horse-power. In a large mill of 30 horse-power capacity, each horse-power ought to manufacture 1 000 feet of lumber; but in smaller mills, proportionately less. A 10 horse-power ought to manufacture or saw 5,000 feet per 12 hours. Mills of larger power than 30 to 40 horse, ought and generally do, overrun 1,000 feet to the horse-power. The friction of a small mill being proportionately greater than that of a larger one, the leverage upon circular saws of same size being the same in each, and the power required to keep up the momentum being the same in both, is the cause of this disproportion in capacity. In very hard timber, 16 teeth to every inch of feed is a suitable number. And in soft timber, 8 teeth, and in medium or mixed timber, hard and soft, 12 teeth to every inch of feed is plenty. The above rule applies to saws not thinner than No. 8 gauge. Saws No. 9 gauge, and thinner, require proportionately more teeth; thicker than No. 6 gauge require proportionately less teeth.

Each tooth in a circular saw, No. 9 gauge, and thicker, that is used on a board mill, will cut on an average from 500 to 1,000 feet of lumber per day, and consume from one-half to a full horse power.

DIR E C T I O N S

— F O R —

Hanging and Running Circular Saws.



DIAGRAM

— FOR —

LINING A SAW WITH THE CARRIAGE.

(SEE OPPOSITE PAGE)

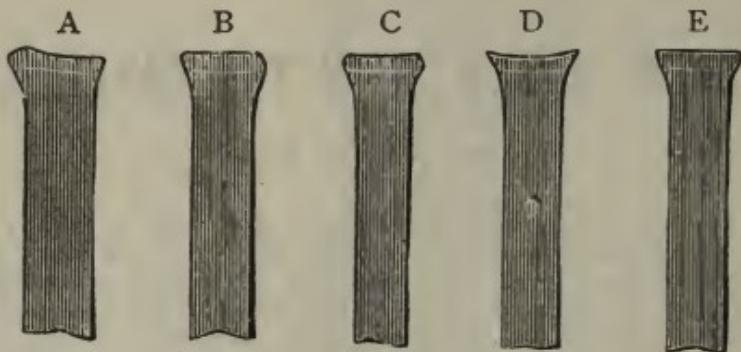
It is almost impossible to make two saws that will hang just alike on the same mandrel, or make the same saw hang alike on any two mandrels. The slightest difference in turning up the collars of the mandrel, or in the finish of the saw near the mandrel hole, will cause a perceptible difference in the hanging, so that it is often necessary to adjust the saw by packing between the collars with writing-paper. In hanging a new saw, it is best to fit it on, screw it up between the collars, and then examine it carefully on the front or log side, and see if the face of the saw is flat. If it is found to be rounding on the log side, cut a ring of writing-paper about half an inch wide, the size of the collar on the outside, oil it and stick it on the face of the fast collar around the outer edge. Then cut another ring of paper of the same width, making the outside of the ring the size of the hole in the loose collar; put this small ring between the loose collar and the saw, and screw up the collars. If the two rings are not enough, put in more, until the saw comes right. If the saw hangs dishing on the log side, reverse the rings of paper, that is, put the small ring between the saw and the fast collar, and the large ring on the loose collar. A very good way to line the saw with the carriage is, first, to take all the end-play out of the mandrel, and run one head-block up opposite the CENTER of the saw. Fasten a square-end stick or piece of board on the head-block, so that the end of the stick will be one-eighth of an inch from the saw. Run the carriage back until the stick is twenty feet from the CENTER of the saw. (SEE CUT.) *A*, represents the saw, *B, B, B*, the head-blocks of the carriage, marked *C*; *D, D*, represents a fine line drawn parallel with the saw, and one-eighth of an inch nearer the head-block, twenty feet distant (see dotted line), from the center of the saw twenty feet.

Should a saw run a little out of true on the rim, it may be made to run true by packing with writing-paper between the saw and fast collar. It is also necessary that the saw mandrel should be PERFECTLY LEVEL, so that the saw will hang EXACTLY PLUMB.

N. B.—Never attempt to run a saw that is dishing on the log side, as it will be sure to draw towards the log. THE CARRIAGE TRACK MUST BE STRAIGHT, AND THE CARRIAGE RUN TRUE. THE FLANGE THAT IS FAST TO THE MANDREL SHOULD BE A LITTLE CONCAVE and the loose flange perfectly flat.

 For further instructions see pages 82 and 83.

Irregular Shapes of Saw Teeth Points.



The above cuts represent a top view of the points of teeth in various shapes. If the point of a tooth gets into the shape of (A), or any other irregular shape, it should first be squared and filed up into a regular shape, so that there will be an equal amount of metal on each corner. If a tooth loses a corner like that of (B), the opposite corner should be filed off so as to have the appearance of (C); swage it into shape like (D), then bring it into a proper shape like (E). (A) is also a bad shaped tooth, having too much metal in one corner, and must be filed into the shape of (C) before it will spread properly.

It is not expected that the saw will come from the factory in perfect order to run ; we round each as perfectly as it can be done off of the mandrel.

When it is fitted to the mandrel in the mill, it should be jointed off and put in perfect order for work.

Remove the worn out teeth first, by holding a heavy instrument like a sledge, heavy hammer, or the end of a bar, on the opposite side, then drive out the rivets with a very small steel punch; then pry them out with the shank of a file or with a tapering steel punch. Use a little oil in the grooves of the teeth, or on the "V" in the sockets of the saw before driving them into their places. Drive gently on the center of the tooth, between the point and the heel.

BE CAREFUL THAT THE TOOTH DOES NOT BIND OR WEDGE IN DRIVING.

 Use a light, round faced hammer in heading up the rivets, and head them very tight, at the same time driving on the top of the tooth. The teeth may be bent into proper position with either a wrench or set, the same as bending the set into teeth of ordinary saws.

After the teeth are inserted, the saw should be jointed off, the teeth well spread, corners dressed off and regulated, or bent into position, so as to project alike on each side of the saw.

FILING OR SHARPENING THE TEETH OF SAWS.

The greatest wear of a saw is on the under sides of the teeth. File nearly to an edge (but not quite), leaving a short bevel of, say 1-32 of an inch wide on the under side of the point. *But in no instance file to a fine point and thin wire edge.*

First.—Be sure that the saw hangs properly on the mandrel.

Second.—The saw must be in proper line with the carriage, and the carriage run true.

Third.—The mandrel must be level and run tight in the boxes.

Fourth.—Round off the saw so that all teeth will cut the same amount, and be sure that the *very points* of the teeth are widest.

Fifth.—Do nearly all the filing on the under sides of the teeth, and see that they are *well spread* at the points; file square and have them project alike on both sides of the saw.

Sixth.—If the saw heats in the center when the mandrel runs cool in the boxes, cool it off and line it into the log a little.

Seventh.—If the saw heats on the rim and not in the center, cool it off and line it out of the log a little.

Eighth.—Do not try the experiment of bending each alternate tooth for the set, when using our Inserted Toothed Saws.

Ninth.—File the teeth hooking, so that the Swage will spread them at the points.

Tenth.—Use a light hammer in swaging, say $\frac{3}{4}$ to 1 pound weight.

In Filing Solid Toothed Circular Saws keep the throats or roots of the teeth *Round*, or as the saws are when new. *Angles, or Square Corners*, filed at the roots of the teeth, will almost invariably cause a saw to crack, the filing of such angles or square corners will cancel the warrant on any saw. *The back or top of the tooth leads or guides the saw* and should be filed square across. The under side of the teeth may be filed a little beveled on the teeth of saws that are bent alternately for the set so as to leave the outer corners of the cutting edge longest.

N. B.—If the foregoing rules are observed, our Saws are sure to give perfect satisfaction. There are many sawyers who are perfect masters of their business and will be successful with any good saw. Others not so well versed in the use of saws may find these directions useful, especially in the use of Inserted Toothed Saws. We shall at all times be pleased to hear from all parties using our saws, who do not meet with perfect success, and more especially from the sawyer.

How to True Saws

ON THE

MANDREL.

It is not generally known, but nevertheless true, that a Circular Saw which does not run true on the mandrel may be sprung into shape by hand in a few minutes, so that it will run perfectly correct, and remain so unless it meets with some severe accident.

This may be done with the saw on the mandrel, and in the following manner: Take off the guides if any, then see that the saw is properly hung on the mandrel and that the collars do not spring it out of shape. (See our Directions for Hanging and Running Circular Saws).

Mark the saw with chalk at four points, equal distances apart, and just at the places where the guides rub the saw, if guides are used. If there is any lateral motion in the mandrel push it endwise so that it will be against one of the shoulders, and be sure to do this in the same way each time that you measure, as hereinafter explained. Now make a hair line or a very fine scratch on the saw-frame or table, parallel with the saw, and opposite the chalk mark on the saw, cut a small stick the EXACT length between the saw at one of the chalk marks and the hair line, or scratch; now turn the saw over and measure from the scratch or mark on the frame or table to the saw at each chalk mark, if all are exactly the same distance the saw is correct and will run perfectly true. If all are not correct, find two of the four chalked marks that are equal distances from the hair line or scratch, and that come opposite each other across the centre of the saw. If the saw is not found to be correct at two of the marks across the center, rub out the marks already made and mark the saw again between them, and if at two of these marks the saw is not correct, mark it over again until at two of the marks it does come right, for two places can be found on every saw that will be correct. If it measures correctly at any three of the points, the saw

should not be disturbed at these. But, if you find at one or two of the points the saw to vary in either direction from those that are correct, turn the marked place up where it is not correct, then push or pull the saw in the direction that you want it to be sprung in order to be true. If you find the saw at two of the points to be sprung in opposite directions across the center, then in the same manner spring it in opposite directions until it comes true. Try the saw occasionally as you proceed to see how you are affecting it. For a very stiff, thick saw it will sometimes require the strength of two men, but generally one man can easily spring it into shape. If you get it sprung over too far put it back in the same manner. There will be no danger of the saw being broken or of springing it between the rim and center or collars.

The saw must of course bend, but the bending will take place at the very edge of the collars, and the bending to get a saw true that is even a full $1\frac{1}{4}$ inch out of true at the rim will be so very little, (it being multiplied as many times as the diameter of the saw is larger than that of the collars upon which it hangs), that you cannot perceive it in the saw where the springing takes place. I commenced trueing saws in this manner 30 years ago in the mountains of California, and have trued thousands in the same manner, and never yet failed to make a saw run correct at the rim and between the guides. By adopting the same means and exercising the same care all circular saws, down to the smallest, may be made to run perfectly true, unless they have been hot and sprung very badly. Some may be inclined to ridicule the idea of springing saws true in this manner, but the proof will be in trying it, observing carefully the above directions.

I have even sprung large circular saws, 72 inches in diameter, that were sprung or dished accidentally fully one inch, and rendered perfectly worthless. I would remove the guide, set the saw in motion, then with a piece of board, pry over the side of the frame against the side of the saw, moving the piece of board along so as to get the saw quite hot ALL OVER. Then stop it and mark four places, and at each of the marks pull the saw up at full strength, at the same time have some one throw cold water on the center with a tin cup cooling it so that it would set at the center first and follow out to the rim. Then after it gets cool and all of the dish out, true it perfect as per preceding directions, and after the job was done the saw would work just as well and remain true just as long as if it had been sent off to a saw maker and the dish hammered out.

The same principle that bends the saw when it is heated so that it will dish over and remain in that condition, if applied while the saw is warm, or pretty hot by friction, will of course bend it back. The same principle that will bend the teeth of a saw so that they will stay bent for the set, will also bend the main body of the saw, it being the same temper throughout.

JAMES E. EMERSON,

For Emerson, Smith & Co. (Limited).

Instructions on Straightening Saws.

Many Saws become crooked or dished at a mill, that may be straightened by any good patient mechanic acquainted with the use of a hammer. Secure a hard wood block, of suitable height, bedded on the ground (not on a floor). The upper end of the block upon which the saw is to be worked should be oval, *i. e.*, about a $\frac{1}{4}$ of an inch, in a 12-inch block, higher in the center than at the edges. Use ordinary blacksmith's hammer, for say a 50 to 72-inch circular saw, of about 8 to 4 pounds weight, and a lighter hammer for smaller or thin saws. The face of the hammer should be oval, with the sharp edges ground off, so as not to cut the saw. Nail up a piece of joist or plank at opposite side of the block, with the upper side a little below the face of the block (say one inch) for the saw to rest on. While at work use a steel straight-edge made of sheet steel about the thickness of an ordinary cross-cut saw, say 20 inches long, $3\frac{1}{2}$ inches wide at center, and tapered to about 1 inch wide at each end, *perfectly straight* with the edge slightly oval (*i. e.*, not exactly flat). For small saws use shorter ones, and a little narrower. We furnish them all perfect, of any lengths desired, and finished, at 10 cents per inch in length. In trying the saw to find the lumps, stand it on edge and apply the straight-edge when the saw is at a poise and on a balance, at the point of tipping either way. Mark the lumps with a piece of white chalk; have a helper to hold the saw on the block, hammer on the lumps or convex parts. All that is really necessary for a new beginner is to try the saw very often by standing it on edge and watch the effect of the blows. Any saw may be changed from a left hand to a right, or *vice versa*, in this manner. If, however, the saw is strained by gumming, with the rim or center loose, or what is generally termed rim-bound, or center-bound, it must go to a good saw maker. An inexperienced person, however, should never hammer a saw on an anvil. There is no danger changing the strain of a saw in using a wood block of any kind. All kinds of long saws may be straightened in the same manner, including Mill, Mulay, Gang, Drag, Cross-Cut, and Hand Saws.

J. E. EMERSON,

FOR EMERSON, SMITH & CO. (Limited).

BUENA VISTA, Oregon, May 20, 1878.

Messrs. EMERSON, SMITH & CO.

GENTS:—The instructions I received from you in relation to taking kinks out of saws, work splendid. I straightened my saw without any trouble, and it runs now as well as it ever did before. Many thanks to you.

Respectfully yours,

JOSEPH SMITH.

UPTON, West Va., March 5, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I tried your way of straightening and taking kinks out of saws. I hammered my saw, put it on and can saw as fast with 60 lbs. of steam as I could with 120 lbs. Many thanks to Emerson, Smith Co. Yours, &c.

H. W. McCURDY.

Suggestions for Making Saw Mandrels WITH SPECIAL REFERENCE TO FACING THE SAW COLLARS.

FIRST.—Special care should be taken to have good drilled centers in the shaft, and when the shaft is turned to see that the mandrel is tight in the Lathe Centers.

SECOND.—Do not chamber out the face of the Saw Flanges or Collars, but finish them so as to give a full bearing on the saw.

THIRD.—The face of the **Loose Collar** should be **PERFECTLY FLAT**, be sure that it is not concaved or full at the center.

FOURTH.—The face of the **Fast Collar**, which is shrunk on or made part of the mandrel, should be faced or made a **TRIFLE CONCAVED**, so that by laying a perfect straight-edge across it and looking through towards a strong light, daylight will be barely discernible. The last cut should be made with a very fine-edged sharp tool. All cast collars should be of very soft iron and carefully annealed so that they will not contain hard spots.

FIFTH.—THE GREATEST CARE should be used in fitting the **LUG OR STEADY PINS**. They should be made of steel, very carefully turned and fitted, so as not to require force in driving. The holes should be countersunk before driving the pins. After they are in, the face of the collar should be very carefully examined with a straight edge to ascertain if driving them has not raised and swelled the metal of the collar around them, and if so, it must be very carefully chipped or filed off level with the face of the collar. The above only applies to circular saw mills. For re-sawing, bench, or for shop work, both collars should be turned a trifle concaved.

So much trouble occurs in the use of Circular Saws in consequence of badly fitted collars, that we venture the above suggestions.

During an experience of over thirty years in hanging, running and manufacturing circular saws, I know that fully nine-tenths of the trouble experienced in operating them is due to the improper fitting of the mandrels or collars.

Saws Getting out of Proper Line with the Carriage.

The drawing of the belt that drives the saw has a continual tendency to get the saw out of proper line—continued pulling in one direction wearing off the journals and boxes (the latter all on one side)—liability of the entire saw frame to move under such a strain, or the bed timbers to give in the ground calls for **CONSTANT WATCHING** and care, especially in **PORTABLE MILLS**, they not being generally set up on permanent foundations.

Respectfully submitted,

J. E. EMERSON,
FOR EMERSON, SMITH & Co. (Limited).

OUR EXTRA THIN SAWS.

Directions and Suggestions for Operating and Running Extra Thin Saws.

To begin with, a high and regular speed is absolutely necessary. The saw should not run less than the speed indicated on page 64. Saws expand or stretch at the rim more than at the center when in full motion, and an extra thin saw (say 66 inches in diameter, and No. 10, 11 or 12 gauge) must be very open at the center.

Our Saws, owing to their SUPERIOR TOUGHNESS, are perfectly safe to be run at about one-fourth greater speed than the table indicates, but saws required to be run at a greater speed than the above-mentioned table shows must be hammered very open and uniform at the center, so that by standing the saw on its edge, it will require quite a push to set the center through either way, and when on the mandrel it will not stand straight, but top over to either side. When at high speed, however, the saw will straighten right up to its work, and make every line true. In taking the first slab off a round log, or the first cut off a square timber, where one side of the cutting points do more work than the other, i. e., where say about one-half the thickness of the saw cuts more than the other half next the slab, the saw will have a tendency to crowd off from the timber, in which case the feed should be a little less than when in a full square cut. With mills using friction feed the man at the lever, under such circumstances, should ease the saw through at less than regular feed.

We are flooded with letters of inquiry asking "how thin a Saw will you WARRANT to do our work? We are now using a saw of such make, cutting — thousand of such and such lumber; our saw is such and such a gauge, cuts a kerf such and such a part of an inch in thickness. If you will send us a saw of such and such dimensions, we will try it and if it prove satisfactory we will pay for it, if not, will return it," &c., &c.

Now these inquiries are all legitimate and proper, and we propose answering them as nearly as possible.

1st. In order to be entirely successful with a very thin saw, the machinery operating it must be well constructed and kept in good order.

2d. The Saw itself must be kept in good order, with the teeth uniform distances apart, and the throats of the teeth kept gummed out to exactly one size, so that the saw will remain in perfect balance; the speed of the saw to be kept as nearly regular as possible, so that the Saw will not hesitate in its cut through the log.

3d. We should know about the speed that each Saw is to run, so as to give the Saw the proper strain in order to provide for the expansion of the rim caused by the velocity of the Saw.

4th. The amount of feed to each revolution and the quality of the timber should be given in order to determine the proper number of teeth required to do the work.

5th. For Circular Saw Mills in Extra Thin Saws, we usually put one tooth to every inch in the diameter of the Saw, i. e., a 54-inch Saw, 54 teeth; a 60-inch Saw, 60 teeth, and so on, down to about No. 11 gauge on the rim. If Saws for board mills are required thinner than No. 11 gauge, we then increase the number of teeth in proportion.

6th. For Sawing Very Choice or Valuable Timber, such as an extra quality of fine black walnut or other valuable timber, we recommend a still greater number of teeth and the Saw to be very tapering, i. e., heavy at the center and thin at the rim; such a Saw, however, is not suitable for splitting logs through the center or for sawing heavy plank, joist or timber.

7th. For Sawing Backing or Thin Box Boards, we generally recommend a Cast Steel Stiffener about 3-16 of an inch in thickness at the center and tapered to a thin edge and from one-half to two-thirds of the diameter of the Saw and not so heavy a Saw, and the saw tapered to the edge of the steel stiffener.

8th. For Resawing Machines, in splitting lumber at or near the center, we taper both sides alike to the collar, but do not recommend a Saw very heavy at the center, say from 3 to 8 gauges, according to the diameter of Saw. We have plenty of Saws of this style in operation as thin as Nos. 16, 17 and 18 gauge.

FOR VERY THIN SAWS.

We generally recommend Solid Toothing, for two important reasons, viz.: a thin saw requires more teeth, in order to do a given amount of work, for the reason that the teeth of a very thin saw are not as stiff as if the saw were thicker, and are therefore more liable to spring sideways and follow the grain of the timber, than if they were thicker. Another reason is that sawyers generally have had more experience with Solid Saws than with Inserted Toothing, and, consequently, more confidence; will persevere and make them go under ordinary difficulties, when they might condemn any Inserted Toothing Saw under similar circumstances.

OUR LUMBERMAN'S CLIPPER, for extra thin saws, is taking the front rank, especially for board mills.

SAWS ON TRIAL.

Daily we are asked for a Saw on trial, and if satisfactory, will pay for it, etc. This is quite as preposterous as it would be to ask a mill man to saw out a bill of lumber, and ship it, and if found satisfactory it would be paid for. If we could afford to do this kind of business, we could send saws to nearly every mill in the United States on the same terms. Our business interest is such, that every failure would damage us; and while we do not doubt but that in most cases, saws furnished on trial would receive fair and impartial treatment, still others having no interest in the value of the saw, it would be condemned and thrown upon our hands. In our circulars we give the names and address of parties who have favored us with their testimonials, and these are only a few of the hundreds which we have in our possession and are daily receiving. We do not mean that any customer shall suffer for the defect of any saw that we make. We shall continue to improve the quality, if possible, and anything that is not fully up to standard quality will be made good by us.

SPECIAL NOTICE.

Before commencing to use our Patent Planer Saws, it is well for the operators to remove several of the bits, one by one, forcing the wedge to exactly the same position that it was when it came from us, observing very carefully the amount of pressure required to force the wedge to its proper place. This will enable the operator to fasten the bits properly when changing. If it is desirable to saw very smooth lumber, use a gauge or side jointer, dressing off the extreme corners of the bits. This can be done in a very few minutes when the new bits are first put into the saw, by using a very hard oil stone and a little oil. In case your mandrel warms so as to warm the centre of the saw, force the wedges a little tighter than usual. This will compensate for the weakness in the centre. In case the saw should warm a little at the rim, or appear a little weak at being run at too high a velocity, do not force the wedges very tight. Nos. 4, 5, 6, 7, 8 and 9 bits will fit the same saw if desired. In using the same saw, it will often be found advantageous to use wider bits for some kinds of timber than for others. When this is necessary, wider bits may be used until dull and worn a little narrow, then re-ground and used a second time; in other kinds of timber, and in some instances, a second time re-ground, and get a third run out of them. From 12 to 16 Saw Bits are plenty, in the very hardest of timber, to carry one inch feed on the saw. Have your saw made with the full number of teeth; but if your power is light, use one-half, one-third or one-fourth the teeth for cutting, and fill up the other spaces with the shanks of worn-out teeth, after grinding off the sides and cutting points, so as to be sure that they will clear the timber on the sides as well as the points.

Our Patent Planer Saws are very easily regulated to suit any speed.

Should the Saw incline to heat at the rim, tremble or run crooked, loosen the wedges a very little, but still tight enough to hold the teeth firmly. Should the Saw appear weak at the centre, force the wedges a little tighter, when the Saw will become firm at the centre. With a little observation and practice in changing and fastening the bits a few times, the operator will be able to leave the Saw in exactly the proper condition to suit the speed, feed and timber. IF BY ACCIDENT the saw plate point back of the teeth, or bits, become bruised so that the upper part of the bit does not have a perfect or solid bearing or support (if not too badly bruised or broken off), the bruised points may be hammered into shape with a very light riveting hammer, first by a few blows on the top; this will upset or widen the point a little; then, by holding the face of a sledge against one side, a few hammer blows on the opposite, first one side, then the other, will put it in perfect shape again. A bit with the sides and ends dressed off, even with the saw-plate, should be fastened in place where the repair is being done. All of our Inserted Toothed Saws are of the same temper and material as our Damascus Tempered Solid Saws. When Planer Saws are damaged by accident, we repair them (if not beyond the possibility of repairs), at reasonable prices. If an entire new set of Mouth-pieces and Wedges are required, and the saw is sent to us, we charge \$1.00 each tooth for inserting and putting Mouth-pieces and Wedges in our No. 1 and No. 2 Planer Saws. In No. 3 we charge 75 cents each, including a new set of Teeth or Bits in the Saw. Duplicate Mouth-pieces and Wedges will be furnished at any time. Price of each Mouth-piece, 50 cents; Wedges, 10 cents; prepaid by mail to any part of the United States on receipt of price, or sent by express. IN ORDERING MOUTH-PIECES, WEDGES OR BITS, give the number that is stamped on the Saw, under the name. In fitting duplicate Mouth-pieces, be very careful to have the space for the bit well fitted, so that the cutting part will be on a line with the balance of the teeth. The best way to fit the Mouth-pieces for the points, is to turn the Saw around by hand, against a sharp hard steel point, and make a hair line around the Saw and Mouth-pieces at the base of the bits (an old taper file ground to a sharp point makes a good one), then fit the bits exactly to the hair line. It is better, when parties can possibly spare the Saw, to send it to us, and have us put in the Mouth-pieces and fit in the bits.

—N. B.—

We are often asked the question :—" What style of Saw would you recommend ? " Which is sometimes difficult to answer, because we do not know all the conditions.

Our Patent Lumberman's Clipper Saw,

For mills running on very heavy feed, in large lumbering districts, where good sawyers are to be had, seems to take the lead.

Our Clipper Patent Flanged Toothed Saw

Is the cheapest INSERTED TOOTHED SAW made, and for ordinary sawing has given the very best satisfaction. We make these Saws with four different sizes of teeth, adapted to nearly every kind of work, to as thin as No. 15 gauge. But we do not advise their use for ordinary Shingle Saws. In order to be successful with any kind of Inserted Toothed Saws the operator must be a good filer, and otherwise understand the use of Saws.

Our Patent Planer Toothed Saw

Has, however, become the favorite, leading all other Inserted Toothed Saws for general purposes, because it does not require an expert filer, causing little or no loss of time at the mill. And, although the first cost is a little more than that of other saws, it is undoubtedly the best saw in the world for general use. We do not pretend that any Inserted Toothed Saw, for a single dash, is the superior of the Solid Toothed Saw, because, when the teeth of the Solid Toothed Saw are full length, with good throat room for the dust, and the teeth in perfect order, with power to drive it, no Inserted Toothed Saw can be made that will cut more lumber in a short time. But in a long run there can be no question or doubt but the Inserted Toothed Saw, for general use, is the superior of the Solid Saw. The Solid Toothed Saw is constantly being reduced in diameter, the expense of labor, files and tools to cut it down, changing the strain of the plates as it is cut away, so that nearly if not every time it is gummed (no matter how it is done), the Saw must be rehammered before it will work properly. These difficulties are nearly all obviated in the use of Inserted Toothed Saws, especially with our Planer, it is all overcome. [See next page.]

Defective Mills and Machinery.

SAWS HEATING AT THE CENTER are almost invariably the fault of either the mandrel heating, or the collars not being properly turned or sometimes the saw may not be in proper line with the carriage, or the track out of order.

SAWS HEATING AT THE RIM and not at the center is generally the result of the saw leading too much into the log, causing it to bear too hard against the outside guide. It has been our lot to hang and put into operation hundreds of large circular saws, and traveling from mill to mill trueing saws and putting the machinery in order. The above defects are among the most prominent. Often the machinist, in putting in the lug pins of a mandrel will turn them too large, then drive them into the collar with a hammer, and swell the metal around the pins without noticing the defect, in such a case, the saw will only have a bearing at a small surface around the pins, and never fit nor hang true until the metal is chipped or filed off level with the face of the collar. Sometimes the collars or mandrel are not turned true with the journals ; this defect should be corrected at once.

HOW TO BE A SUCCESSFUL SAWYER.

1st. Acquire sufficient knowledge of machinery to keep a mill in good repair.

2d. See that both the machinery and Saws are in good order.

3d. It does not follow because one saw will work well that another will do the same on the same mandrel, or that even two saws will hang alike on the same mandrel; on the principle that no two clocks can be made that tick alike, no two saws can be made that will run alike.

4th. It is not well to file all of the teeth of circular saws from the same side of the saw, especially if each alternate tooth is bent for the set, but file one-half the teeth from each side of the saw, and of the teeth that are bent from you, so as to leave them on a slight bevel and the outer corner a little the longest.

5th. Never file any saw to too sharp or acute angles under the teeth, but on circular lines, as all saws are liable to crack from sharp corners.

6th. Keep your saw round, so that each tooth will do its proportional part of the work, or, if a reciprocating saw, keep the cutting points jointed on a straight line.

7th. The teeth of all saws wear narrowest at the extreme points; consequently, they must be kept spread so that they will be widest at the very points of the teeth, otherwise, saws will not work successfully.

8th. Teeth of all saws should be kept as near a uniform shape and distance apart as possible, in order to keep a circular saw in balance and in condition for business.

 In ordering Extra Teeth or Saw Bits, always give the number in plain figures that is stamped on the saw that is under our name. We keep a record of every saw.

PLANER SAWS.

WE PRESENT WITH PRIDE the following array of overwhelming testimonials of our Planer saws. We have the original letters to every testimonial that we publish, and challenge any other Saw Makers in the World to present an equal evidence of *superiority*; and they are only a few of the hundreds we possess.

Used the Patent Planer Saw 5 years, cutting 5,000,000 feet per year.

Office of JOSEPH WALTON & CO., 134 Water St., }
PITTSBURGH, Pa., March 18, 1878. }

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTS:—We take great pleasure in testifying to the merits of a genuine article, and willingly grant the use of our name to a testimonial such as you refer to, presenting the facts that after more than five years' use of your Patent Planer Toothed Saw, in rafted timber, full of gravel, grit and spikes, cutting about 5,000,000 feet of timber annually, we have discarded all other saws and ordered a second one, being fully convinced that it is the best and most profitable saw that we can use.

JOSEPH WALTON & CO.

At this date (1888) Messrs. Walton & Co. are still using our Planer Toothed Saws.

Our Saws and Hand Book all that they had to learn from.

SANDY, Utah, Jan. 28, 1888.

Messrs. EMERSON, SMITH & CO., Limited.

DEAR SIRS:—Would you please send me your latest catalogue and price-list or small Hand Book for sawyers. I have had two of your Planer Toothed Saws, and consider them, without doubt, the best general purpose saws made. My brother and myself bought a saw mill, engine, etc., about two years ago, neither one of us had been around a saw mill for a day in our lives before, but my brother was a locomotive engineer, so we thought that we would try a saw mill for a change. I had picked up one of your old Hand Books of 1876 (part of it lost) and got struck on your Planer Toothed Saw, so when we bought our mill, solid toothed saws were ordered at first in the hurry, and we never thought of it for two or three days, when we at once went to the agent and had him telegraph to change the saws for two of your Planer Toothed Saws, at an increased price over the cost of the others, (we bought a Taylor double mill), and it was the best forethought we ever had. I don't know what we would have done if it had not been for your saws and your Hand Book, that was all that we had.

We knew nothing about a mill, and all the men we had knew less than we did, but we persevered, and used quite a few more bits than we would have done had we not been green hands. We would have absolutely ruined a solid saw before we learned how to saw. We finished our contract and sold our outfit for just what it cost us, and we are now looking for another contract, and will buy another mill, and you can consider it the same as settled, that we will have no other saws but your Planer Toothed.

Yours respectfully,

A. H. ROCK.

42-inch Planer giving perfect satisfaction.

FORT LANDING, North Ca., May 12, 1887.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I am still running the 42-inch Planer Toothed Saw, bought of you August 25th, 1883, and giving perfect satisfaction, and will recommend her to all as the standard saw for general use. Yours respectfully, J. B. COMBS.

54-inch Planer is the best they have ever used.

LOGAN CITY, Cache Co., Utah, Oct. 29, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Enclosed find Post Office order for which send 300 bits for Planer Saw No. 7348. We would here express our entire satisfaction with the above saw, it is the best we ever used, this is our second season of sawing, and we have never made better lumber before. It never makes a crooked line. Yours respectfully, JOHN CROWTHER & SONS.

Were mistaken, but now admit their mistake.

SAVILLE, Perry Co., Penn., April 11, 1887.

TO THE PUBLIC:—Two years ago we bought of Messrs. Emerson, Smith & Co. (Limited), a 48-inch Planer Toothed Saw, and almost two years after told them that the saw was not working right, and our 48-inch solid saw would beat it. They had us send it back to them and repaired it free of charge, and now it spins like a new top, and the 48-inch solid saw that I referred them to has now lost two inches in size, bought at the same time that the 48 inch Planer was.

The 48-inch Planer is yet 48 inches and will be. To all who want to buy a saw we would say buy a Planer and be done with gumming and buying a new saw every two or three years, and you will find that you will save time and money.

Yours respectfully, L. E. SHULL & A. RICE, Sawyers.

Knocks all the Teeth out and at Work in Ten Minutes.

JUPITER, Miss., April 26, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have been running your Planer Saw only three weeks, and my short experience is that I will have no other saw as long as I can get the Planer. Why, you can knock all of the teeth out against the head blocks, which was about my first performance, and be at work again in ten minutes. Respectfully yours,

G. M. BURNHAM.

Best Saw in the World, Ten Minutes per Day will Keep it in Order.

JEFFERSON, North Ca., Aug. 3, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

Please forward at your earliest convenience 500 Bits. The Planer Saw is a good one and has given me perfect satisfaction. I do not hesitate to say that it is the best saw in the world, and I would have no other under any consideration. Upon an average it can be kept in good running order with from five to ten minutes work in the day. This is my sixth year in saw mill business.

Yours, &c,

JOHN W. SEVERT.

PLANER SAWS.

48-inch Planer Saw has been running over two years and is as good as new.

CLAY LICK, Franklin Co., Pa., Feb. 4, 1886.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have met with perfect success running your 48-inch Planer Saw for over two years. I am using No. 8 Bits and cut from 3 to 4 thousand feet per day. Very truly yours,
G. W. ANGLE.

Planer Saw Bits cost less than Gummimg Solid Saws.

LEAKSVILLE, Page County, Virginia, Oct. 17, 1884.

Messrs. EMERSON, SMITH & CO.

SIRS:—Please find \$2.00 for Saw Bits for my Patent Planer Saw we bought of you twelve months ago. The bits do not cost as much as gummimg. The saw gives entire satisfaction; it does not get dull or get out of order once to where a solid saw gets out of order ten times. You are at liberty to use this.

Yours, etc., M. N. & D. W. STRICKLER.

Planer Saw has sawed the mill dogs off twice and been running again in five minutes. It is worth a wagon load of solid saws.

RIALS, Miss., January 10, 1884.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have now been using one of your Planer Saws a year. I would not give it for a wagon load of solid saws. I have run it ever since I bought it, and have sawed my mill dogs off twice and had it running again in five minutes. You are at liberty to publish this. Yours, etc.,
CHARLES BURNS.

Planer Saw. He has had three years' experience with the Saw, and the Planer is the saw for him.

CENTERVILLE, Tennessee, Feb. 1st, 1883.

Messrs. EMERSON, SMITH & CO.

GENTS:—I have had three years' experience with your Planer Saw, and it is the saw for me. Yours truly,
SMITH H. SHELBY.

Mill Dogs Won't Stop it.

Office of JOHN RYAN,
CANDOR, N. Y., October 31, 1877. }

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Planer Toothing Saw I got of you last August I consider a success in every particular. Even saw dogs will not stop her course. The other day we sawed off two without breaking a tooth: the lumber is nice and every way perfect. You are at liberty to publish or post this where you please.
JOHN RYAN.

Saws 17,000 feet of hard wood, with 14 Bits with a 10-horse Pony Mill.

MINERVA, Ohio, May 24, 1882.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—I use a Massillon ten-horse Pony mill, which I bought February, one year ago: ran steady until threshing time commenced, cut about 2,000 logs; commenced sawing again the 1st of December last; sawing steady ever since, and have about 100 Bits left out of the 500 that you gave with the saw. I use 14 cutting Bits and have sawed 5,000 feet per day of hard wood, and 17,000 feet with 14 Bits. There are several Pony Mills in this vicinity—some using solid saws. None have run so steady, and can show so good a record as I can.

Respectfully yours,

HIRAM WALKER.

Planer Saw.

Parties who advised him not to have anything to do with the Planer Saw, now stalk their necks and look like an owl sitting on a limb to see it work.

HOMER, Louisiana, Aug. 28, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—Our Saw heated a little at the center at first, but we soon got over that. I am well pleased with the saw now. Several men who advised me to have nothing to do with any Inserted Toothed Saw now stalk their necks and look like an owl sitting on a limb to see it work. I am well pleased, it can't be beat.

Yours truly, JOHN W. McFARLAND.

Used saws 37 years, but the Planer is easiest to keep in order and the quickest to get ready.

WILLEWATER, Polk Co., Minn., Dec. 13, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—You may think that this is a blow, but I sawed all of last winter and only used two 10 cent files—such as are used for filing hand saws—on my Planer Toothed Saw. I have used all kinds of saws since 1850, up till this time, your Planer Saw is the easiest saw kept in order, the quickest to get ready that I ever handled. This is from an old saw filer that is well known in Missouri and Minnesota.

Yours respectfully,

DANIEL CAMERON.

56-inch Planer Saw cut into the guide an inch and was going all right in a few minutes.

Office of W. R. ODLE, TUNICA STATION, Miss., Feb. 29, 1886.
Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have used your 56-inch Planer Saw now over a year, the guide was knocked against it one day cutting an inch into the side of it and it was running again in a few minutes. I am satisfied, had it occurred to a Solid Saw, I would have been stopped at least a month; but, thanks to Emerson, Smith & Co., I have a Planer Saw.

Very respectfully yours,

W. R. ODLE.

96 EMERSON, SMITH & CO. (Limited),

Planer Saw is the best that he ever run.

LEXINGTON, Indiana, September 8, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please find Post Office order for \$30.00, for which send me 1,000 Patent Planer Saw Bits for Saw No. 6670. The saw you sent me is the best I ever run. She is excellent.

Yours, etc., JAMES HALL.

Can beat the World with the Planer.

WIRT COURT-HOUSE, West Virginia, {
November 16, 1877. }

Mr. J. E. EMERSON.

DEAR SIR:—I am running your Planer saws in Mr. Hale's mill and can beat the world with them. Have handled saws for over twenty years and they beat the world.

WM. S. SPRATT.

Mr. Spratt is very high authority.

Two Years in Pitch Pine.

LEXINGTON, North Carolina, October 2, 1877.

Messrs. EMERSON, SMITH & CO.

GENTS:—About two years ago I bought of you a 52-inch Planer Saw which has proved to be all, if not more, than you claimed for it. I would not exchange for any other saw that I ever seen. Please send me by express, C. O. D., 1,000 more Bits, just the same size as the last lot.

H. J. GRIMES.

Planer Saw.—The Planer Saw does more work with one 10-horse engine than a Solid Saw with two 10-horse engines.

ORLANDO, Mich., June 11, 1879.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I must say a word about the Planer saw. I was running with Messrs. Wade & Wiley when we got it; we used two 10-horse engines; one of them got out of repair for a short time, and we accidentally discovered that with the Planer Saw we could do as much sawing as with both engines when we use the solid saw. I have run saws a great deal, but never saw anything to compare with the Planer Saw for light power. With 10-horse power we cut 6,000 feet of hard timber per day. We have sawed about 250,000 feet with the 500 Bits you sent with the saw, and have over 150 left yet. We only use half the teeth at a time on a light power. They are a grand saving of time and files. I cut off a spike once, and spoiled every tooth, and replaced them, and had the engine and saw at work again in just eight minutes.

Yours respectfully, BROWN & PRESCOTT.

Planer Saw runs seventeen hours per day in Frozen Hemlock, snaked on the ground, using only one set of Bits per day.

HUNTINGDON, Mass., Jan. 14, 1880.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I write to let you know how that Planer Saw works. I run from 7 o'clock in the morning until 12 o'clock at night, and have used about one set of Bits each day sawing hemlock full of knots and part of the time FROZEN HARD and being snaked on the ground, and more or less dirt on them. I have run on higher feed than I was able to do with solid saws, and do not lose an hour or two in filing either.

H. E. STANTON.

Is just the thing for Sawing off Nails in Sawing Timber from off an Old Fair Ground.

BROOKFIELD, Trumbull Co., Ohio, Feb. 27, 1882.

Mr. EMERSON.

SIR:—I am well pleased with the Planer Saw. These bits are just the thing for sawing nails; have been sawing the timber from off an old fair ground, and it is nothing strange to strike a nail and but a short job to put in a new tooth or bit.

J. L. DOWD.

Planer Saw is all right in Long-leaved Yellow Pine.

MEXICO, Texas, January 25, 1882.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I am using one of your Planer Toothed Saws, and it is giving satisfaction. We are sawing right through Long-leaf Yellow Pine Knots, and not losing a single corner from the bits.

Yours truly,

J. E. BENHAM.

Has used a 54-inch Planer Saw over 5 years and never had a bit yet loose and the saw shows no sign of wear.

Office of H. & S. BAUDER,
PORTERSVILLE, Pa., Jan. 21, 1886. }

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The 54-inch Planer Saw with 500 extra bits we bought of you in 1881 we are pleased to say is to-day as good as new in all this time we never had a tooth yet loose nor break and it does not show the least impression of wear.

We remain, very respectfully,

H. & S. BAUDER.

Planer Saw is the Greatest in the World for Devouring Logs.

WILLIAMSBURGH, Calhoun Co., Georgia, }
March 26, 1884. }

Messrs. EMERSON, SMITH & CO.

GENTS:—I can scarcely give you any idea of how nice our saw works. It is the greatest invention of the nineteenth century, and beats the world for devouring logs into merchantable material.

THOMAS ROBAN.

54-inch Planer Saw with only 10 teeth works well and makes nice lumber.

HEADQUARTERS, Kentucky, Aug. 28, 1882.

Messrs. EMERSON, SMITH & CO.

GENTS:—We are running our 54-inch 7 x 8 gauge Planer Saw with 10 teeth, being only one-third the number in the saw, and the bits stay sharp longer than when we ran with 15. We have no trouble with it in any way. It is the saw for us.

Respectfully yours, J. D. FEEBECK & BRO.

Planer Saw works splendid. Cuts 10,000 feet per day on a Blandy Mill. Is worth \$500.

COLE CAMP, Mo., June 25, 1882.

To EMERSON, SMITH & CO.

GENTS:—The Planer Saw we bought of you works to perfection. Can easily cut 10,000 feet in ten hours, of hard oak lumber on a Blandy Mill. We would not take five hundred dollars for it if we could not get another.

Yours truly, SMITH BROTHERS.

Planer Saw for nice, smooth, easy work is worth half a dozen Solid Saws.

Office of W. N. WINFREY & Co., }
WOODLAND MILLS, Alabama, Aug. 31, 1883. }

Messrs. EMERSON, SMITH & CO.

GENTS:—The Planer Saw you sent us came promptly to hand and just leads any thing for nice, smooth, easy work. We would not give it for half a dozen of the best solid saws that are in use here. Very truly yours,

W. N. WINFREY & CO.

50-inch Planer Saw 7x8 gauge does the best business and takes the least power of any saw in that section.

WAYNE, N. Y. Jan. 22, 1886.

Messrs. EMERSON, SMITH & CO.

GENTS:—Our Planer Toothing Saw bought of you does the best business and takes the least power and makes the smoothest lumber of any saw that has ever been in this section.

Respectfully yours, J. B. & S. D. CLARK.

Planer Saw is worthy all the praise he can bestow upon it, and he has run solid saws several years.

LEARY's, Calhoun Co., Ga., October 5, 1885.

Messrs. EMERSON, SMITH & CO.

GENTS:—Please send me C. O. D. 200 Planer Saw Bits for saw No. 6350, No. 6 and 7 gauge, bought of you last year. In regard to the saw it is worth all the praise we can bestow upon it. I am a practical sawyer, have used solid saws several years, and can say I would not exchange this for half a dozen solid saws. Nearly two years I have run this one, and have not lost a minute's time on account of it not working right. With my best wishes, I am

Respectfully, etc.,

G. W. WISEMAN.

Planer Saw has been in use five years, and would not give it for anybody's new solid saw now.

TUSCUMBIA, Alabama, November 2, 1885.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—My 52-inch Planer Saw has now been running nearly five years, and I would not give it to-day for anybody's new solid saw, and never expect to run any other kind of saw but Emerson's Planer Saw while I follow saw milling.

Respectfully, etc.,

MARTIN H. HALL.

64-inch Planer Saw entirely satisfactory.

Office OIL WELL SUPPLY Co.,
VAN WERT, Ohio, February 27, 1882.

To EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—Please ship us by express 1,000 Bits for one 64-inch Planer Toothed Saw, which we ordered of you August 13, 1881. This saw gives entire satisfaction and has been admired by parties who have not yet used the Patent Toothed Saw.

Yours respectfully,

J. R. HUGHES, Manager.

A 43-inch 7x8 gauge Planer Saw stands Burr Oak at 40° below zero like a major.

WILLEWATER, Minnesota, January 25, 1887.

Messrs. EMERSON, SMITH & CO.

GENTS:—My Solid Toothed Saw done very well till I came to the prairie Burr Oak at 40° below zero, then it began to show weak, I then took it off and I put on the Planer Saw and it stands the test like a major.

Yours respectfully,

DAVID CAMERON.

100 EMERSON, SMITH & CO. (Limited),

Planer Saw runs with one-third less power than Solid Saws.

ST. CLAIR, Hawkins Co., Tenn., Nov. 15, 1882.
Messrs. EMERSON, SMITH & CO.

GENTS:—I have been using the only Planer Saw that I have ever seen, and I think it is the best that I ever saw, and it runs with one-third less power than any Solid Toothinged Saw.
Yours truly,

R. M. N. HAWKINS.

Planer Saw on a Russell & Co. heavy mill sawed off wrought iron dog and cost 30 cents.

FAIRVIEW, Virginia, Sept. 19, 1882.
Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have a Russell & Co., Massillon, Ohio, heavy mill and one of your 56-inch Planer Saws. I have been sawing ash, hickory, walnut and poplar, and nothing checks its speed. We placed so much confidence in that we got hold of a loose wrought iron dog which cost me thirty cents for bits. Had it been a solid saw it would have been ruined. * * *

Truly yours,

HIRAM TYREE.

Planer Saw on a Gaar, Scott & Co. mill of Richmond, Indiana, saws over 5,000 feet per day with 12-horse power engine.

ROSINA, Michigan, March 2, 1883
Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I am running one of your Planer Saws on a Gaar, Scott & Co. 12 horse-power mill built at Richmond, Indiana. It averages over 5,000 feet per day, and am well satisfied that it is THE SAW for light power mill.

Yours truly,

GEORGE KLINC.

54-inch Planer is the best Saw in America.

GLENDALE, Davies Co., Indiana, Jan. 10, 1888.
Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—My saw is a 54-inch, and the best saw that I ever handled. I have got one of your 7x8 gauge solid saws also, and it is a good one, but not as good as the Planer Toothinged. I got the Planer Toothinged the 1st of April, second hand, and have sawed over two hundred thousand feet with it, and have not had one hour's trouble with it. It is the best saw in America to my notion.

Yours,

NELSON GREGORY.

Planer Saw cuts 20,000 feet of one inch Shell Bark Hickory in 10 hours with 20-horse power.

BERGEN, N. Y., Sept. 3, 1883.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I am running the 52-inch Planer that you sold to Messrs. McKinzie, Howes & Co. and find it a complete success. I can saw 20,000 feet of Shell Bark Hickory into one inch lumber daily, 10 hours' run, with a 20-horse engine. I don't believe they could beg, borrow or steal a log in New York State so hard that she won't cut it. I have had 14 years experience with saws, and always found that your saws were far superior to any that I have run.

Yours, &c., WILLIAM J. GRAHAM, Sawyer.

Planer Saws 72 and 28-inch on an Erie City Iron Works Mill.

McKENDREE, W. Va., Dec. 15, 1880.

Messrs. EMERSON, SMITH & CO.

GENTS:—I am using 72 and 28-inch Planer Saws on my mill at Kanawha Falls, and they are as near perfect as saws can be made, I think.

Truly yours, S. H. BROWN.

54-inch Planer Saw works well on one of their make of mills, sawing drift wood, nails and spikes.

Also the 52-inch is all right.

ALLIANCE, Ohio, May 15, 1885.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—The 54-inch Planer Saw we put on our mill at Industry, Pa., started off first-class, sawing drift logs, nails and spikes and all, and did not spoil a board or vary a line. We just heard from the 52-inch Planer Saw you sent to Confluence, Pa., for us, March 20th. Parties say it works like a daisy.

Respectfully yours,

E. FAWCETT & SON,

Improved Steam Engines, Portable and Stationary Saw Mills,
Alliance Industrial Works.

48-inch Planer Saw has been run 6 or 7 years and would not give it for a dozen Solid Toothed Saws.

ABLEMANS, Wisconsin, Nov. 17, 1886.

Messrs. EMERSON, SMITH & CO.

GENTS:—The Planer Toothed Saw cannot be beaten. I would not give it for a dozen solid toothed saws, I have run it now 6 or 7 years.

Respectfully yours,

GUSTAVE SCHARNKE.

102 EMERSON, SMITH & CO. (Limited),

Planer Saw 48 inches in diameter, 8 and 9 gauge, has sawed 500,000 feet of lumber with 350 bits.

PORTERS CORNERS, N. Y., January 16, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please ship me 250 saw bits for my 48-inch 8 and 9 gauge Planer Saw. The saw runs like a top; have sawed 500,000 feet with less than 350 bits. Truly yours,

T. B. ARCHER, Dry Goods and Groceries.

Planer Saw cuts more lumber in same time than any saw he has seen in 10 years experience.

McCORMICK, Abbeville Co., So. Carolina, July 27, 1882.
Messrs. EMERSON, SMITH & CO.

GENTS:—We are running for about ten months one of your Planer Saws. I have had ten years experience with saws and this is the best saw that I ever run. Will cut more lumber and do it easier than any saw that I ever run.

Yours respectfully, JNO. U. SANDERS.

48-inch Planer Toothed Saw, 26 teeth, 6x8 gauge, struck a stone, broke 3 teeth and delayed only 3 minutes.

LUZERNE, N. Y., May 15, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Planer Saw reached us May 3d at 2 P. M., was strictly hung and sawed 88 pine logs before she quit her half day's work, on $2\frac{1}{2}$ -inch feed, and strange to say, was not yet dull. This was all of the pine left when the saw arrived. It has run $10\frac{1}{2}$ days already, and the teeth are not yet worn out. I struck a stone once which broke 3 teeth, which delayed us about 3 minutes; this is all of the stops she has made yet. I have sold another saw for you already to a man for whom I sawed for four years, and he is going to build another mill this summer, and he wants to get one of these saws. I told him that all of the fault that I could find with these saws was that they were not half recommended by the Company that made them.

Yours truly, SAMUEL HONEY.

Planer Saw cuts from 1,000 to 1,500 feet of lumber more per day than their solid saw.

BLACKSVILLE, West Virginia, Nov. 9, 1886.

Messrs. EMERSON, SMITH & CO.

GENTS:—The Inserted Toothed Saw we bought of you April 30th, is the very saw for our timber. We cut from 1,000 to 1,500 feet more per day with it than with our solid saw.

Respectfully yours, JOHNSON & MAPEL.

Planer Saw clips off Spikes and Nails, and does not damage more than three bits.

LINTON, Jefferson Co., Ohio, April 10, 1883.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—We would not exchange our Planer Saw for a dozen solid saws. In our business we saw a large quantity of timber that floats down the river from Pittsburgh, covered with grit and full of spikes and nails. We can clip them off and not injure more than three points, and in five minutes are going again as good as ever. Saving much time and expense.

Yours respectfully,

J. L. MAHAN & CO.

Planer Saw in frozen timber—wants nothing more to do with solid saws.

Office of W. H. & J. C. HARRINGTON, {
MONTROSE, Pa., Jan. 10, 1884. }

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—About a year ago we exchanged our solid saw for one of your Planer Saws, and our experience proves clearly that we want nothing more to do with solid saws. It stands up better in frozen timber, requires less power, and we don't want anything but the Planer Saw.

Yours very truly,

W. H. & J. C. HARRINGTON.

Planer Saw No. 4241 has sawed over 1,000,000 feet of lumber with 500 bits, spikes, gravel and all.

ITALY HILL, Yates Co., N. Y., April 17, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—Inclosed please find \$5.00 for Bits for saw No. 4241. The extra 500 bits that you sent with the saw have sawed over one million feet of all kinds of lumber, spikes and gravel by the wagon load. Yours respectfully,

BLOOD & KENNEDY.

Planer Saw that cut a one-inch wrought bolt nearly off with no special injury to the saw.

BIERS P. O., Pa., March 3, 1884.

Mr. J. E. EMERSON.

DEAR SIR:—The iron bar, one inch square, which you have in your office, nearly cut in two, was done with one of your Planer Saws by me on a mill in Allegheny Co., Pa. It got into the saw accidentally, the saw was 56 inch. in diameter, No. 10 gauge. I have cut with this saw about 400,000 feet of hard wood, running in all seasons. The saw was always easy to control, and makes good smooth lumber. I have also run one of your No. 8 Gauge Planer Saws in frozen timber with perfect success.

Yours respectfully,

J. S. V. McCOY.

104 EMERSON, SMITH & CO. (Limited),

Planer Saw No. 6,400 sawed two inches deep into a cast-iron wheel, and never hurt the saw nor a tooth.

ALBANY, Gentry Co., Missouri, Dec. 31, 1883.

Messrs. EMERSON, SMITH & CO.

SIRS:—Please send me 500 bits for Planer Saw No. 6,400. I believe that the Planer is the best saw in the world. I sawed two inches deep into a cast-iron wheel, and never hurt a tooth. I would not take what the saw cost and a solid saw to boot. All who see mine run say it is a daisy.

Yours, etc.,

J. E. M. WILLIAMS, Sawyer.

Planer Saw No. 6,452 is the "Boss" for frozen timber.

MILLETT, Crawford Co., Wisconsin, March 7, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—My Planer Saw No. 6,452 is the "Boss" for cutting frozen timber. When other mills were shut down on account of frost, we were cutting right along every day.

Yours truly,

CALLAWAY BROTHERS.

Has a 52-inch Planer Saw and a Lumberman's Clipper
—both work to his entire satisfaction—run
by an experienced man.

HAILEY, Idaho, Nov. 15, 1883.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I have one of your Planer and one of your Lumberman's Clipper Saws, and both work to my entire satisfaction. My sawyer just told me that these were the first saws that he ever run, and that he had formerly been an "off bearer" in another mill, and seeing that these saws were so easy to manage, hired with me as a sawyer, and has never had any trouble.

Yours truly,

F. H. ROWE, Proprietor.

Planer Saw with a 15 horse-power engine cut a 24-inch dry hemlock log that had been two years in the yard into boards in just four minutes.

YORKSHIRE CENTRE, N. Y., Nov. 3, 1883.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have been operating saws for fifteen years, but the Planer Saw in Mr. Crawford's mill is the finest working saw that I ever saw run. There were a dozen spectators when I started it; we put on a dry 24-inch hemlock log that had laid in the yard two or three years, and with a 15 horse-power engine and 80 lbs. of steam, the log was cut into boards in just four minutes. Mr. Crawford would not have that saw taken out of his mill for \$500.00.

Truly yours,

JAMES M. FORESTER.

Lumberman's Clipper cuts off 9 spikes in one run and did not break teeth or saw.

PINE GROVE, Pa., June 1, 1882.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Ten days after I commenced using the Lumberman's Clipper Saw, I cut off nine spikes in one cut, and did not break a tooth or even a corner off, but wore the points off considerably. The saw has never made a miscut yet, and has sawed the very hardest of timber that grows. Yours truly,

SIMON MOORY.

A No. 10 gauge Lumberman's Clipper Saw cuts hickory sawdust a full $\frac{1}{4}$ -inch thick (samples sent us).

GARWOOD, Pa., March 17, 1886.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Enclosed is a sample of sawdust cut from a hickory log by one of your Lumberman's Clipper Saws, No. 10 gauge. I get the credit of doing the best and nicest sawing in Washington County. Everybody said when I got so thin a saw that I could not run it at all. But I can cut stuff $\frac{1}{8}$ of an inch thick, and it will be the same all through. I remain, yours respectfully,

E. GREGG.

A No. 10 gauge 60-inch Lumberman's Clipper Saw with 60 teeth is just the saw for their hard native wood.

POLLOCK, Sullivan Co., Mo., May 1, 1886.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The saw you furnished me with Lumberman's Clipper Teeth is easily kept in order, takes but little power and gives perfect satisfaction. Your 60-inch, No. 10 gauge Saw with 60 teeth is just the thing for our native hard wood timber.

Yours truly, J. E. DAVIDSON.

54-inch Lumberman's Clipper is the finest saw that he ever run in 16 years' experience.

FORKSTON, Wyoming Co., Pa., Sept. 13, 1886.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have had 16 years' experience in the use of saws and must say this is the finest saw I ever run. The Swage you sent with it is perfect. The saw never has made a bad run.

Respectfully yours, J. S. CANFIELD,
Sawyer and Filer.

A 66-inch Lumberman's Clipper Saw cut 365,000 feet of lumber in five days.

Office of STURGEON RIVER LUMBER CO. }
HANCOCK, L. S., Michigan, June 28, 1882. }

Messrs. EMERSON, SMITH & CO.

GENTS:—For the last five days ending last night, we sawed 365,000. We think it a good record. Very truly yours,

O. W. ROBINSON, Agent.

IVANHOE, Pitkin Co., Colorado, March 20, 1891.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penna.

GENTLEMEN:—We received the 54-inch Lumberman's Clipper Saw on the 5th, and after putting it in order I put it on, and was surprised to see it work so well in hard frozen logs. I can say that it is the best saw that I have ever seen.

Very respectfully yours, A. S. CRAWFORD,
By W. C. SLOAN, Sawyer.

106 EMERSON, SMITH & CO. (LIMITED)

Nine million feet sawed in one season with two
66-inch Saws, No. 8 gauge.

Office of STURGEON RIVER LUMBER CO.
HANCOCK, Lake Shore, Michigan, April 12, 1886. }

Messrs. EMERSON, SMITH & CO. (LIMITED), Beaver Falls, Pa.

GENTLEMEN:—We cut last season with one pair of your Saws 9,000,000 feet, an average of 52,000 feet daily, 11 hours run. We call this good work for one circular mill. Truly yours,

O. W. ROBINSON, Agent.

Five years ago we furnished the above described saws to this firm and they took the place of No. 6 gauge Saws that had formerly run in their mill.

FROM THE AUSTRIAN EMPIRE.

Report of a 60-inch Clipper Saw furnished Baron Rose Staltberg.

Pozega, Slavonia, Austria, Europe, October 14, 1879.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have started the mill built by the Waterous Engine Works Company, of Brantford, Canada, and sold to Baron Rose Staltberg, with one of your 60-inch Inserted Tooth Saws, and I have to say that it is the first Circular Saw Mill with so large a Saw that has ever given satisfaction in the timber here. It is Mountain Oak and Beech, and we have no timber in the United States nor in Canada that is so hard to cut, therefore it wants the very best Saw that can be made. If you remember, it is such a mill as I had at the Centennial. Now we are going to order another saw, 52 inches in diameter, from you, and leave it to yourselves what kind of a saw to send.

Yours truly,

JOHN LYLE,
Millwright for the Waterous Engine Works.

ST. JOHNS, Arizona Territory, April 21, 1885.

Messrs. EMERSON, SMITH & CO.

GENTS:—The 54-inch Lumberman's Clipper Saw is started and runs all right, the best of any saw I ever run. You will get all our orders in your line.

Yours respectfully,

W. S. HILL & CO.

LEXINGTON, North Carolina, Dec. 15, 1890.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The saw that you put the Clipper Teeth in for me is certainly a fine saw. I have never cut a crooked line with it yet. It will run with less set than any saw I ever run. Yours truly,

H. J. BERRIER.

HUNNEWELL, Shelby Co., Mo., July 28, 1891.

Messrs. EMERSON, SMITH & CO. (LIMITED).

GENTLEMEN:—I ship you to-day one 48-inch Lumberman's Clipper Saw that I want retoothing and hammered. I bought it about one month ago, and have been using it three weeks, and it is the first Inserted Saw that I have ever used, and I am so well pleased with it, I will never use any other kind. She has the right name, if she ain't a "Clipper" I never saw one. When not in the cut, she lays very near over on the carriage, but when you give her the speed she straightens up and cuts as well if not better than the solid saw that I have been running. I cut from three to five thousand feet per day with her in the shape that she is in now with a ten H. P. engine.

Yours respectfully,

JAMES TUTTLE.

LUMBERMAN'S CLIPPER SAW.

72 inches in diameter, cut 35,000 feet, without filing, the first day it ever ran. We have just completed two more 72-inch Clipper Saws for this firm.

BAY CITY, Michigan, Nov. 12, 1879.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The 72-inch Lumberman's Clipper Saw has arrived, and this morning I put it on about 10 o'clock, and it ran till the mill shut down to-night, and ran over eight hours without filing, and I have no doubt cut 35,000 feet of first-class lumber (Norway and White Pine). I believe that I now have two of the best Circular Saws in the Valley.

Yours truly, D. B. MCRAE,
Foreman and Millwright of Pitts & Cranage Mill.

56-inch, 10 Gauge Lumberman's Clipper Saw.

NEW PHILADELPHIA, Ohio, Dec. 17, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—You will remember about one year ago I bought of you a 56-inch 10 gauge Lumberman's Clipper Saw, I will say of said saw that it is the best saw that I ever ran, in an experience of 12 years.

It is the lightest running, smoothest cutting, and in short the most satisfactory saw I ever handled. It seems to make no difference with it what kind of a log. I have sawed the hardest kind of hickory, sugar and locust timber, and it has proven itself equal to any emergency.

Yours with respect, JOHN ARNOLD.

Lumberman's Clipper runs into the head block. It is the best saw that he has used in 20 years.

MARION, Michigan, Feb. 8, 1886.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—I have been upwards of 20 years in the mill business and used nearly all kinds of saws, but have never seen anything like the teeth I now use in my saw.

We sawed a half-inch off the head block Friday and was running again in one hour. I never before seen Saw Teeth that would bend straight back and stand setting up again until I used your Lumberman's Clipper.

Yours,
WILLIAM GIBBON.

108 EMERSON, SMITH & CO. (Limited),

Lumberman's Clipper 56-inch Nos. 9 and 10 Gauge Saw and Swage, both work to perfection.

SYLVAN, Richland Co., Wisconsin, Oct. 4, 1883.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The 56-inch 9 and 10 Gauge Lumberman's Clipper Saw, and the Swage that came with it, both work to perfection. I have had ten years' experience with saws, and this is the best that I ever used.

Yours truly,

OLIVER GUESS.

52-inch Lumberman's Clipper 10 and 11 gauge, and has cut 1,000 feet of lumber per hour with an 8x12 engine.

TIROGA CENTER, N. Y., Feb. 5, 1884.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I would not give my Lumberman's Clipper for all the solid saws that you could pile in my mill. With my 8x12 engine I cut easily 1,000 feet of lumber per hour.

Respectfully yours,

CHAS. H. TRIBE.

Extraordinary thin Lumberman's Clipper Saw, 48-inch, No. 14 gauge, in Pitch Pine, on 2-inch feed.

ATHENS, Ga., April 18, 1878.

Messrs. EMERSON, SMITH & CO.

GENTS:—The 10 Gauge at center and 14 at rim, Lumberman's Clipper Saw, 48 inches in diameter, is a perfect success. I would not run a thick saw if it were gifted to me.

Yours truly,

H. T. FOWLER.

N. B.—February 7th, 1878, Mr. Fowler ordered a No. 9 or 10, and 14 Gauge, to run 600 revolutions per minute on 2-inch feed, in Pitch Pine. We declined filling the order for a saw so thin to run any risk and sent him one No. 9 at center and 10 at rim. He declined receiving it, saying that he would pay for what he ordered and take all the risk. And Mr. Fowler was right. We sent him what he ordered then, and the above letter is the result. The saw was about as limber as a dish rag. The center would push through like the bottom of an old tin pan, and appeared as if it might stand to saw butter if it was not too hard. Now, all we have to say is, if Mr. Fowler wants another saw, No. 20 Gauge and 48 inches in diameter, for Pitch Pine or anything else, he can have it. But we don't advise anybody to have large saws, No. 14 Gauge; yet, if wanted, we are ready to make them.

E. S. & CO.,

Per EMERSON.

48-inch Lumberman's Clipper Saw, No. 8109, made from 47-inch solid saw. Saw is 8x9 gauge with 40 teeth.

BRAMANS, Wayne Co., Penna., March 12, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Lumberman's Clipper works to perfection. The more I use it, the better I like it. I was prejudiced against inserted toothed saws, but this has cured me, for I think that it beats any solid toothed saw that I ever run.

Yours respectfully,

JOEL G. HILL.

Lumberman's Clipper says that it is all that we claim for it. Runs it on $4\frac{1}{2}$ inch feed.

CORNPLANTER, Warren Co., Pa., Dec. 5, 1883.

Messrs. EMERSON, SMITH & CO.

GENTS:—Your Lumberman's Clipper Saw is all that you advertise for it, our largest feed is $4\frac{1}{2}$ inches, on that it runs successfully, and does good work in both pine and hemlock.

Yours truly, G. R. M. CRAWFORD, Sawyer.

Lumberman's Clipper works "Boss."

CHIPPEWA, Mich., July 12, 1883.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—The Lumberman's Clipper works "Boss." The teeth stand sand and gravel first rate. Sawed the other day 18,000 feet maple and basswood that was snaked in the sand, and we never "rossed" a log and only filed once. It is the best saw I ever used.

Yours truly,

F. J. JACKSON.

Clipper Saw is the best. He has run mills for 20 years.

Runs with a Leffel Water-wheel $26\frac{1}{2}$ inch, 20 foot head and cuts 104 feet in 2 minutes.

LACONA, N. Y., Nov. 30, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—The Clipper Saw is the nicest I ever saw run. Yesterday I cut 104 feet in 2 minutes. I have run saw mills for 20 years and would not give this saw for any other that I ever used.

J. H. REYNOLDS.

Clipper Saw 60-inches in diameter, runs on $5\frac{1}{2}$ inch feed in Hemlock.

ELDRED, Pa., June 22, 1883.

Messrs. EMERSON, SMITH & CO.

GENTS:—I am running the Lumberman's Clipper Saw on $5\frac{1}{2}$ inch feed in hemlock, making good cuts all the time. I shall want another before long as I shall not use solid Saws any more.

Respectfully yours,

H. P. HALL.

56-inch Lumberman's Clipper Saw, 9x10 gauge, with 40 teeth made from 55½-inch Solid Saw.

52-inch Lumberman's Clipper Saw, 9x10 gauge, 48 teeth made from 52-inch Solid Saw.

LEADVILLE, Col., June 15, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—Will say for the 10 gauge saws, they are the finest I ever saw. I never want to run a thicker saw in this country and this kind of timber. I am running three inch feed, cutting hard pine, with very large hard pitch knots. I will send you two more saws, one 48 and one 60-inch. The 48-inch saw I will have ground to 10x11 gauge.

Yours truly,

S. P. GUTSHALL.

Clipper Saw No. 6894 has run a year, cut 700,000 feet and the one set of teeth are good for 100,000 more. Our swage is the boss.

ORION, Mich., February 25, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—It has been about one year since we got the saw from you, and it works like a charm. We have cut 700,000 feet of lumber by our book, and the set of teeth that came in the saw are good for 100,000 feet more. So you see we are well pleased with it; We have two other saws of _____ & Co.'s make in the mill, but they can't go on our mill again, for we think your saw runs easier.

Yours truly,

GREEN BROTHERS.

CHATHAM, Ontario, Canada, May 14, 1877.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

DEAR SIR:—The 68-inch Lumberman's Clipper, Nos. 7 and 9 gauge, 68 teeth, came all "O. K." and it does good work; we can cut nine 12-foot boards per minute, of Sycamore, with it, and KNOW that we can save over 1-16 inch in each cut. We never could cut over six to seven boards per minute before, with same power; and this 68-inch Saw makes much better lumber.

Yours truly,

J. J. BIRDSEY.

N. B.—Every 1-16 of an inch saved in the width of the kerf saves one thousand feet of lumber in each 16,000 sawed; therefore, any mill cutting on an average 16,000 feet per day will save 26,000 feet of lumber per month, being more than the entire expense of running the mill.

Lumberman's Clipper, True as a Die and Stiff as a Plank.

CHAUTAUQUA LAKE MILLS, Mayville, N. Y., March 11, 1887.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—We wish to say a word regarding the 56-inch, 40 toothed 6x7 gauge Lumberman's Clipper Saw we had of you last Spring. We have had two experienced sawyers, one has been head sawyer in different places for a number of years, and the other has a big reputation in Chautauqua and other counties. They are both unanimous in saying that it is the best saw they ever put into timber. One had never run an inserted toothed saw before and was a little shy at first, but now says that if he was going to buy one hundred saws they would all be like it. She is as true as a die, and stiff as a plank, and keeps her course no matter what takes place. Yours respectfully, MALICK & COLTON.

Forty-six inch Lumberman's Clipper Saw, 7x9 gauge with 32 teeth made out of a 44½ inch solid saw.

STRODE'S MILLS, Penna., June 14, 1887.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—The saw that you inserted for me gives perfect satisfaction. It works Boss. It cannot be beat, as I can saw boards with it just alike. It runs in any kind of timber, as I have tried it in all kinds. When I first got it there were some sawyers came to the mill and they said that it would come out if I got into a knotty hemlock, but they staid about three hours and it worked good, and they beat out. It is the best saw that I ever run.

Yours truly,

JOHN BISHOP:

52-inch Lumberman's Clipper, 6x7 gauge with 28 teeth.

MASONTOWN, Penna., Feb. 20, 1888.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—The saw that I ordered of you has been received all right. I run it in curly sugar without any trouble with a 10 H.P. engine. I have been running a solid toothed saw of the best make 48 inches in diameter, but I can run your 52-inch Lumberman's Clipper with the same power and same feed, cutting full width. Respectfully yours,

LOWRY JOHNSON.

Lumberman's Clipper has taught lots of Old Saw Men which is the "Boss Saw."

VALLEY P. O., Washington Co., Iowa, March 13, 1887.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Penn.

DEAR SIRS:—The 52-inch 9x10 gauge Lumberman's Clipper Saw, No. 8160 is the best saw that I ever saw. It is more than I really expected. I had no trouble to start it, for it is the first saw I ever hung. I am not a sawyer by trade, still I have run the saw just two weeks and have had no trouble and have not lost any time, only in filing.

It beats anything I ever saw. I would not have the old kind if gifted to me. I have sawed as hard timber as grows, and it stands the racket all right. It is the only saw in this section, and old saw men told me when I got it, that I could not run it, but they were mistaken, and it beats them all. It has better temper for our timber, saws through knots, and gravel better than any other saw, in short it is the best saw in the woods.

I will say that I am more than satisfied with it, it has taught lots of old saw men which is the "Boss Saw."

Yours, etc.,

EDWIN SINGMASTER.

Solid Saws in one of the most powerful mills in Wisconsin.

Office of R. D. PIKE,
BAYFIELD, Wisconsin, Oct. 1, 1883. }

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please ship me a 54-inch Saw to take the place of one of the 56-inch saws that you shipped me last Spring. I unfortunately broke one of them the other day ; put 80 teeth in it. They were the finest saws I have ever had in my mill.

Yours, &c

R. D. PIKE.

Solid Saws No. 11 gauge, 52-inch, been used 3 years and run right yet.

MANQUIN, King William Co., Va., Feb. 20, 1883.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS :—The swage is received, and I write to express my entire satisfaction with it, as it is worth its weight in gold. "No cracked teeth now." I am running two mills and using both the No. 11 Gauge Saws that I got from you over three years ago and still running beautifully.

Very truly yours,

H. B. TOMLIN, JR.

Solid Saw on a Stearns Mill operated by an Experienced Sawyer.

ISLE OF WIGHT, Va., Sept. 7, 1882.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN :—I started the mill sold to Mr. Price to-day, Mr. Price is delighted with both mill and saws. I tried one of the saws to-day that you sent him, and must say that it is the best saw that I ever run.

Yours very respectfully,

E. M. LINK.

Solid Saws—Our Damascus Tempered Saws beat all that he has ever run.

WILLOW SPRINGS, Mo., February 2, 1885.

Messrs. EMERSON, SMITH & CO.,

Manufacturers of Circular Saws.

GENTLEMEN :—I have run several different makes of saws, but must say that your Damascus Tempered Saws beat any that I ever handled for standing right up in our southern pine knots.

Yours truly,

J. M. PADGET, Yellow Pine Lumber.

Shingle Saw 36 inches in diameter, No. 9 and 16 gauge, is cutting the smoothest shingles they ever made.

TABERG, N. Y., May 5, 1885.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—The saw is cutting the SMOOTHEST *shingle* we ever made on our machine.

We remain yours respectfully,
B. WATERMAN & SONS.

Solid Saw excelled all others that he ever used since Nov. 12, 1883.

POINT COUPEE PARISH, NEW ROADS P. O., La.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—The saw I purchased from you excelled all others that I ever used, and your adjustable swage is the best that I ever heard of. I have struck my saws several times on spikes, but with your swage I would get them in order in a few minutes.

Yours respectfully,

D. LADMIRAUXT.

Solid Saw with 50 teeth, 9 and 10 gauge, cut the head block and one sawmill dog off with no repairs except sharpening.

HAMBURGH, Arkansas, January 25, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The 50-inch 9 and 10 Gauge Solid Saw gives perfect satisfaction. We run with 2-inch feed in short-leaf pitch pine, and cut one head block off and one sawmill dog. It makes the smoothest and best lumber of any saw in this county.

Respectfully yours,

J. R. FRANKLIN & SONS.

Found a little fault at first, but is all right now. Cut 20,000 feet of hard lumber at one filing.

Office of JAMES J. YOUNG,
POCOMOKE CITY, Md., January 29, 1883.

Messrs. EMERSON, SMITH & CO.

GENTS:—In justice to you, we would say that the saw of which we made complaint, has after a little use come all right, and has since cut 20,000 feet of Oak and Pine lumber from one filing, which is four times the quantity cut usually with any of the other make of saws in our use at one filing. Our timber is very knotty and hard, and this proves the superior quality of steel and temper. Yours is the best saw that I ever drew a file over.

Yours truly,

FRANK M. WILSON, Sawyer.

Inserted Toothed Saws, 54 and 60 inch, on a Buckeye Mill in Cuba.

PUERTO, Cuba, January 15, 1885.

Messrs. EMERSON, SMITH & CO., Beaver Falls, Pa.

GENTLEMEN:—We have two inserted Toothed Saws manufactured by you, 54 and 60 inches in diameter, received from Buckeye Engine Co., and are using them constantly on our sawmill, and we are happy to inform you that they are working to perfection on all classes of both hard and soft woods on this island. The circulars with instructions for operating were unfortunately lost. We will be pleased to receive duplicates of same by return mail for translation into Spanish.

Respectfully yours, ROBERT R. BRUCE.

Has a Lumberman's Clipper Saw, and never spent money on anything so profitably before.

NEW WINDSOR, Illinois, October 4, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:— * * * Your Clipper Saw is running true as a lathe yet. It would be difficult to estimate the amount of work one set of teeth will do, the time and metal saved in using them. I never spent money so profitably before as in buying this saw. Respectfully, etc.,

N. S. HAM.

Clipper Saw—he is 68 years old, and ran saws 35 years.

Spoiled a solid saw in same timber that his
Clipper is working all right in.

HALL'S CORNERS, Allen Co., Indiana, October 31, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please send me another set of teeth as soon as possible. I bought a 52-inch solid saw and have spoiled it sawing hickory. The Clipper Saw is the best for me of all saws, and I have used saws over 35 years and am 68 years old. I can saw as much lumber as the best sawyers, but I want Emerson's Clipper Saw to do it with. Yours as ever,

ISAIAH FANSLER.

Light adjustable Guide Hammer Swage on a Planer Saw more than doubles its former work.

GRANTSVILLE, Md., June 22, 1885.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:— * * * since using your light Guide Hammer Swage on my Planer Saw Bits they do more than double the work before using it. We would not do without it at any price.

Yours respectfully,

H. S. BAUCHER & BRO.

OUR PATENT SWAGE.

RICHMOND, Jefferson Co., O., July 4, 1879.

Messrs. EMERSON, SMITH & CO.

GENTS:—I have been using your Patent Swage for three years, and find it the best one I have ever used. I can say this knowingly, for I have been using all kinds of Swages for nine years. I can make any shape of point I want to with your Swage, and that is what I cannot do with a good many others.

Yours truly,

G. A. HALES.

CRESCEENT, Saratoga Co., N. Y., March 17, 1876.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I have received the Swage that you sent me by express; it cost me more for expressage than I was aware of; it cost me \$5.55, but it is a good thing. My sawyer brings in on an average of one thousand feet of lumber more every day than when he used the old Swage. He says it beats anything he ever saw.

Yours respectfully,

CALVIN BAKER.

ADJUSTABLE SAW SWAGE IS THE BEST FOR INSERTED AND SOLID SAWS.

COFFADELLAH, Miss., Sept. 10th, 1884.

Messrs. EMERSON, SMITH & CO.

GENTS:—After having given your Swages a fair trial, I pronounce them the best to be had for both solid and inserted toothed saws. They do every thing that they are recommended to do, fast, easy and correctly.

Yours truly,

L. B. GREER.

PLAINFIELD, O., February 24, 1870.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I would say in regard to your Patent Saw Swage, that I have laid my other in the shade. I never used one that works as complete. It does not drive the tooth back, like my other Swage did. I would not be without one if the price was ten dollars.

Yours truly,

J. B. BASSETT.

FINDLAY, Ohio, November 21, 1879.

Messrs. EMERSON, SMITH & CO.

SIRS:—Please send me one of your Adjustable Saw Swages as quick as possible. They are the best Swage in use. I have used two of them and they have given the best satisfaction of any that I have ever used. I have been head sawyer for sixteen years, and I think I can use one of your Swages to perfection. I went into a saw mill some time ago, and their saw was not dressed right, and they could not do anything with it. After a while, I said I believed that I could make it go, and they told me to take hold of it. I took my Swage out of my pocket, and swaged the saw, and told them to let her go, and it went through oak timber, on a two inch feed as straight as a line. They would have my Swage, and now I want another one as soon as possible.

Truly yours,

HENRY SWANK.

Saw Swage, has had eight years' experience,
and it is the best that he ever used.

DAWSON, Geo., March 6, 1882.

Messrs. EMERSON, SMITH & CO.

GENTS:—The Patent Adjustable Swage that I ordered from you is the best that I ever used, and I have had eight years' experience as a sawyer, and have found none that spreads the teeth of a saw as perfect as yours. I can do what little filing there is to be done after yours in one-fifth the time it takes me to file after any other kind of Swage that I ever saw, and my saw runs lighter than I ever could make it before.

Yours very truly,

J. G. H. QUATTLEBAUM,
Practical Sawyer and Machinist.

Saw and Swage are both satisfactory.

MILL CREEK, Luzerne Co., Pa., Jan. 17, 1882.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—The Saw you sent me is doing excellent work; is very stiff for a thin saw, and of good temper; carries an edge longer than most saws; I only file twice a day. The SWAGE goes ahead of all Swages that I ever used, and I have now three different makes. It does not drive in the top of the tooth, but keeps it in proper shape, thus saving the saw very much.

Yours with respect,

J. H. WEAVER,
Foreman and Sawyer.

HINESVILLE, O., March 26, 1877.

Messrs. EMERSON, SMITH & CO.

SIRS:—I have received the Saw Swage as ordered, and I am perfectly satisfied. It spreads the teeth as nice as can be; I have no trouble with the saw as before; the saw runs cool and straight.

Yours truly,

D. D. MYERS.

TIOGA CENTER, N. Y., January 28, 1877.

Messrs. EMERSON, SMITH & CO.

DEAR SIRS:—I received the Patent Swage that you sent me and acknowledge it to be the "boss" Swage. It was a little awkward at first, but I soon got the hang of it. My other swages must have raised the—with my saw, for it never run as well as after using your Swage. I have seen hundreds of teeth pictured out, and I said to myself, after trying every other Swage that I could get hold of, "It's one thing to picture a tooth, and another thing to make it with a Swage." But yours will do it, certain, if properly used.

ABNER HILL.

SOUTH HAMILTON, Madison Co., N. Y.
March 19, 1877.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—I wish to say to you that the Saw Swage I purchased of you works to a charm. I will honestly say, it is the best kind of a Saw Swage I ever saw or used.

Yours truly,

P. B. FULLER.

BAND SAWS—LARGE AND SMALL.

131 & 133 State Street,
Rochester, New York.{ 27 Great Jones Street,
New York City.Office of CHAPPELL, CHASE, MAXWELL & Co.,
Manufacturers of Burial Caskets.
ONEIDA, N. Y., Nov. 15, 1886.

MESSRS. EMERSON, SMITH & Co. (LIMITED).

GENTLEMEN :—The 30 feet by 3-inch 18 gauge Band Saws we have been using for the past six months, of your manufacture, far surpass any other make we have ever used.

Yours respectfully,
CHAPPELL, CHASE, MAXWELL & CO.From the first 8-inch Band Saw ever made in the
United States.

ARCATA, Humboldt Co., Cal., Jan. 12, 1878.

MESSRS. EMERSON, SMITH & Co.

GENTS :—The 8-inch Band Saw you made for us is giving good satisfaction. The mill is a success. Cuts 15,000 ft. per day. We are running this Saw 6,000 lineal feet per minute, and think it will stand even more. We will want two more soon.

Truly yours, N. H. FALK.

N. B.—Please note the date of the above.

E., S. & Co.

Another 54 foot Band Saw, 8 inches wide, 16 Gauge.

Office of EAST TAWAS LUMBER & SALT CO.,
EAST TAWAS, Mich., August 21, 1886.

Mr. A. G. McCOY, Agent, EMERSON, SMITH & Co. (Limited), Beaver Falls, Pa.

DEAR SIR :—We bought from Emerson, Smith & Co., of Beaver Falls, Pa., through you, one 16 gauge Band Saw, shipped from the factory, May 11th last. We put it on our mill on its arrival, and have used it about every day since. It has given us the best of satisfaction, and, in fact, for a time, the "Emerson" Saw was literally the only one we had that we could use at all. It wore out all the other saws we had. We have an order in at your people's factory now for another saw, and we hope it will be soon along.

Yours truly,

EAST TAWAS LUMBER & SALT CO.

ARMSTRONG MANUFACTURING COMPANY,
Manufacturers of Plain and Japanned Wooden Ware,
PETOSKEY, Michigan, Jan. 30, 1891.

MESSRS. EMERSON, SMITH & Co., Beaver Falls, Pa.

GENTLEMEN :—We are pleased to report that your Saws still continue to be superior to others. We are using in our band mill one of your 10-inch Saws, which cut this morning SIXTEEN THOUSAND FEET of FROZEN MAPLE, in five hours, into 1 in. and 1½ in. stuff except a little 2 in. It was put on at 7 a.m. and taken off at noon.

Yours truly, F. L. BLAIR, Resident Partner and Manager.

BAND SAWS.

Band Saw 54 feet long by 8 inches wide, No. 16 Gauge,
was $7\frac{1}{2}$ hours continuously sawing oak.

Is the best ever used.

Office of HITCHCOCK & BIALY,
SOUTH BAY CITY, Mich., August 21, 1886. }

A. G. MCCOY, Esq., Agent EMERSON, SMITH & Co. (Limited),
Beaver Falls, Pa.

DEAR SIR:—In reply to your inquiry as to how we like the Band Saw purchased of you, would say we are well pleased and more than satisfied with it. It is the BEST SAW we have got in our mill that we have used; will hold a good cutting edge longer and stand more feed than any others. Our men call it the "Daisy," and it's that in each particular. We have run this saw $7\frac{1}{2}$ hours continuously by cutting oak, and the last hour's work was as good as the first. We give your saw this credit as it has earned it thoroughly. When we are in need of some band mill blades you shall have our order, and if they prove as good as this one, you will have settled the question of a good band saw.

Yours respectfully,
HITCHCOCK & BIALY.

Band Saw is ahead of the French Perin Saw.

AKRON, Ohio, March 8th, 1883.

Messrs. EMERSON, SMITH & CO.

GENTLEMEN:—Please favor me with Emerson Hand Book. I am using your Band Saws and have used the Perin (French) Saw, but I claim yours is far ahead of any other that I ever used.

Respectfully yours,
B. F. FERGUSON,
Head-Sawyer for Diamond Match Co.

FOLLOWING, WE GIVE A

List of Manufacturers of Circular and Band Saw Mills.

OUR SAWS ARE USED ON ALL THEIR MILLS, AND DOING EQUALLY WELL ON EACH, AND THE PARTIES MAY BE RELIED UPON AS BUILDING GOOD MACHINERY AND MILLS.

CIRCULAR SAW MILLS.

Mansfield Machine Works, Mansfield, Ohio.
Russell & Co., Massillon, Ohio.

F. J. L. Blandy, Zanesville, Ohio.

Erie City Iron Works, Erie, Pennsylvania

The Lane Manufacturing Co., Montpelier, Vermont

Frick & Company, Waynesboro, Franklin Co., Pennsylvania.

Geiser Manufacturing Co., Waynesboro, Franklin Co., Pa.
Griffith & Wedge, Zanesville, Ohio.
Watertown Steam Engine Co., Watertown, N. Y.
C. & G. Cooper & Co., Mount Vernon, Ohio.
Waterous Engine Works Company, Brantford, Canada.
Buckeye Engine Works, Salem, Ohio.
Richmond Machine Works, Richmond, Indiana.
John I. Case Threshing Machine Co., Racine, Wisconsin.
Harrisburgh Car Works, Harrisburgh, Pennsylvania.
A. B. Farquhar, York, York County, Pennsylvania.
McNamar Machine Works, Newark, Ohio.
Reinhard Scheidler, Newark, Ohio.
A. C. Powell & Son, Syracuse, New York.
Reynolds & Lang, Ithaca, New York.
Garver, Foltz & Company, Hagerstown, Maryland.
Hamblin Sons & Company, Greenville, Pennsylvania.
Spangenburgh, Pendleton & Company, Warren, Ohio.
Moulthrop & Sons, Conneautville, Pennsylvania.
Clark & Lane, Huntingdon, Pennsylvania.
The Westinghouse Co., Schenectady, New York.
Eagle Machine Works, Indianapolis, Indiana.
Vinton Iron Works, Indianapolis, Indiana.
Hugh, Wright & Company, New Lisbon, Ohio.
Enterprise Manufacturing Company, Columbiana, Ohio.
Mecklenburg Iron Works, Charlotte, North Carolina.
J. M. Luther & Co., Marion, Virginia.
George R. Lombard & Co., Augusta, Georgia.
Grayson Machine Works, Old Town, Virginia.
Industrial Machine Works, Jacksonville, Florida.
Liddell & Co., Charlotte, North Carolina.
A. H. Osborne, Clarksburgh, West Va.
Kingsland & Douglas M'f'g Co., St. Louis, Mo.
Lansing Iron & Engine Works, Lansing, Michigan.

BAND SAW MILLS.

Stearns Manufacturing Co., Erie, Pennsylvania.
Hoffman Bros., Fort Wayne, Indiana.
Berry & Orton Manufacturing Co., Philadelphia, Pa.
Smith, Myers & Schneir, Cincinnati, Ohio.
Marinette Iron Works, Marinette, Wis.

It is useless to ask us who build the best mills; some are adapted best for one class of sawing, and others for another class. We have appropriated these two pages in order to avoid answering so many of these questions, and trust that our patrons will, as much as possible, apply to Mill Builders. We do not build either Saw Mills or Band Saw Machinery, but confine ourselves to Saws, etc., advertised in our Hand Book.

Below is a list with the full name and address of all our Special Agents in the Southern States, who keep in stock a general assortment of our Saws, including Large Circulars. Parties ordering through them will receive the full benefit of our best discounts:

F. P. GRAVELY, 61 Carondelet St., New Orleans,
La., *Manager New Orleans Branch.*

BENTON & UPSON, Jacksonville, Fla.

FORBES LIDDELL & Co., Montgomery, Ala.

DUDLEY E. JONES Co., Little Rock, Ark.

GEORGE BROWN, Knoxville, Tenn.

GEORGE R. LOMBARD & Co., Augusta, Ga.

BREM & Co., Charlotte, N. C.

We have made a GREAT REDUCTION from former prices on all of our Saws, and invite correspondence from all persons using or dealing in our goods, or interested in saws. We will pay the same attention whether it is a band saw $\frac{1}{8}$ th of an inch or 12 inches wide, or a circular saw 4 inches or 76 inches in diameter.

 We promise a prompt reply.

We cannot be excelled in QUALITY or in price, quality being considered, and have fully kept up with the "procession" of low prices without reducing goods either in material or workmanship.
SEE PAGES 2 and 15 OF THIS BOOK.

EMERSON, SMITH & CO. (Limited),

Beaver Falls, Pa.

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OUR PRIZE.
IN THE
GREAT NATIONAL SAWING CONTEST

At Cincinnati, September, 1874.



FIRST
PREMIUM
IN THE
GREAT
PROVINCIAL
SAWING TEST
IN CANADA,
IN 1873.



FIRST
PREMIUM
OVER ALL
COMPETITORS
AT THE
STATE FAIR
IN NEW
HAMPSHIRE
IN 1875.



First Premium Gold Medal,

AT CINCINNATI, SEPT., 1875, FOR PLANER SAW,

AND FOUR FIRST PREMIUMS

AT THE "TRADESMEN'S EXPOSITION," PITTSBURGH, IN 1875.